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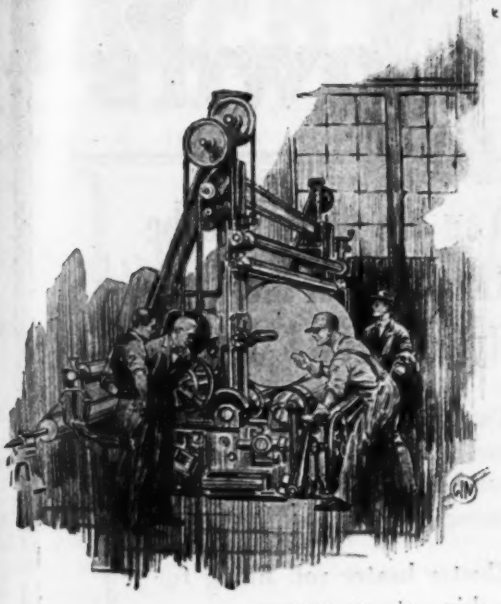

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PAPER TRADE JOURNAL
ESTABLISHED 1872

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

FIFTY-THIRD YEAR

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Vol. LXXXI. No. 18 PAPER Thursday, October 29, 1925

The Magazine of the Paper Industry

# Manufacturing of Pulp and Paper in 1925

## The Industry Considered from a Technical Viewpoint—Many Radical Changes from Long Established Practice—Most Advanced Examples of Progress, Both Mechanically and in Regard to Process Development, To Be Found in Those Branches of the Industry Which Have Expanded Most Rapidly

WRITTEN ESPECIALLY FOR THE ANNUAL MILL NUMBER BY WM. G. MACNAUGHTON, SECRETARY OF THE TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY

During the past quarter century there has been such a marked advance in all branches of the paper industry, that a brief survey to indicate the high points of its progress on this continent is believed worthy of outlining.

It will be understood that in the various parts of the country, in different mills in the papermaking centers, and even in the same plant, there may be found in use equipment and processes which elsewhere have been long since superseded, as well as those representing the most recent developments. In general the most advanced example of progress of the industry, both mechanically and in regard to process development, are to be found in those branches which have expanded most rapidly. Such are in particular, newsprint and the pulp entering into its production, groundwood and sulphite.

To an almost equal extent, however, similar progress has been made in regard to wrapping and in printing papers, especially those grades made in large tonnage for magazine publication. As a natural result of these developments other branches of papermaking have been similarly affected, especially where replacements of equipment have become necessary.

Besides the rapid increase in the width of the paper machines as well as the refinements in them to permit of increased speed of operation, an outstanding tendency to be remarked is, wherever possible, to make the processes continuous rather than intermittent as heretofore.

There has also been a growing recognition of the value of the primary raw materials and the vast savings that can be effected by prevention of waste in paper manufacture which was formerly considered unavoidable.

### Raw Materials

Although for the finer writing papers and for specialty papers, rags of various kinds, cotton linters and old rope are used as formerly, wood is the raw material that has been drawn upon almost entirely in the expansion of the industry.

In the species of wood employed, spruce is still at the forefront and there are several reasons why it has continued to be the most important pulpwood. It is a light-colored wood of even texture and contains very little resin and consequently is particularly adapted for mechanical pulp. It also occurs in large stands but little mixed with less desirable pulpwood species. In general, too, the spruce areas are in regions well supplied with water power sites which are capable of development at reasonable cost.

In consequence of these facts it is natural that in the phenomenal increase in the demand for newsprint paper in North America, the development of this branch of the industry should be in the northern and eastern sections of the continent where the spruce and water power are found together.

While considerable interest has been directed in recent years to southern Alaska on account of its spruce and water power, it seems more likely that the spruce areas of western Montana will first be developed.

For wrapping paper, wood pulp made by the sulphate process has been found especially desirable on account of superior toughness of the product and its resistance to wear. As the sulphate process, being alkaline, is particularly adapted for pulping resinous woods, it is those species which have been most heavily drawn upon in the increase in wrapping paper production of recent years.

On account of the vast pine areas of the southern states, the mild climate and the favorable growth conditions, this section of the country has seen a remarkable papermaking development. While it may be reasonably expected that the manufacture of wrapping and bag papers will in time be concentrated in the South, there may be some doubt regarding other grades such as newsprint and book papers.

The basis of the hope that these grades too may be made in the South in competition with other regions where they are now established, is the abundance of rapid growing hardwoods such as gum and cottonwood. These would provide the soda pulp for book paper and, if the process being tried experimentally proves commercially successful, would give a substitute for the groundwood from spruce.

For the long fiber needed for book paper, there is a modified chemical process which shows considerable promise, whereby a light-colored, unbleached pulp is obtained and which is capable of being bleached. Should this and other processes now being developed prove commercial a great change in the regional distribution of the paper industry could be expected.

### Other Raw Materials

Many attempts have been made in past years to use bagasse, the refuse from sugar cane, for the finer grades of paper, and many thousands of dollars have been lost in the projects. It was only when the natural limitations of the material were recognized, as well as its suitability in coarser form for making a building material, that success in the use of bagasse was achieved.

At the same time special machinery had to be developed for the

process which, although similar in its essentials to paper making, is in other particulars quite different.

While it is difficult to forecast with any accuracy, it seems likely that the next raw material to be used in increased quantity is cereal straw.

As is well known the present use for straw in paper making is practically confined to making straw paper, for corrugated container board, for egg case fillers and for similar grades.

The use of bleached pulp from straw in Europe, for fine papers and the development of the chlorine processes there, have raised the expectation that the vast quantities of straw now practically wasted in the grain growing areas of United States and Canada, may be profitably applied to paper making.

The difficulties with cereal straw are many. Being a seasonal crop it would be necessary to collect a year's supply in one or two months, and provide a storage protected against the weather.

For fine paper the difficulty of freeing the straw from weeds and dirt is especially great as otherwise the resultant product would be unsuitable for the finer grades.

Generally speaking the factor which will determine the possibility of using this material as well as others now wasted, is that of the cost of the pulp in comparison with wood pulp of equal quality. As paper mills dependent on wood are obliged to go farther and farther afield or to reforest their lands for their supply, the possibility of using the yearly vegetable crops for some of the grades comes closer at hand.

Statisticians have shown that the United States uses more than half of all the paper made in the world. Most of this paper is now composed of wood pulp either directly, or indirectly in the form of old paper.

While bleached pulp from straw, cornstalks, cotton stalks and other yearly crops may be used to displace the bleached chemical pulp from the hardwoods, this could only be done on a competitive basis of cost of production.

Straw pulp is particularly suited for special printing papers which, in United States, have a relatively limited market. In consequence, while efforts to utilize the vegetable materials now wasted should be encouraged, it is proper to point out the difficulties to be faced.

In this discussion of the present status and tendencies of pulp and paper manufacturing along mechanical and chemical engineering lines, consideration will be very largely confined to the use of wood as the chief primary raw material, with some reference to the utilization of waste papers.

### Pulpwood

As has already been pointed out, the chief species used is spruce. Many other similar species have shown a considerable increase in their use in recent years. These are particularly various species of fir, pine and hemlock in those papermaking regions where they are to be found either in large stands or mixed with spruce.

The hardwoods as indicated are utilized for the bleached so-called "soda" pulp by whatever chemical process it is made and used in the manufacture of book paper. To some slight extent they are also used for mechanical pulp in the higher grades of newsprint.

### Pulpwood Production

In pulpwood production the tendency is away from hand labor and towards a more general use of mechanical labor-saving machinery.

While hand-operated cross-cut saws are still used for felling the trees and cutting them to length, the use of mechanical handling equipment afterwards has resulted in the pulpwood being made in longer lengths. These are usually of 16 foot, although in parts of Eastern Canada the standard length is 12 feet. It is only in the smaller individual operations or to conserve the full available length of the tree that pulpwood of 4 foot length is prepared. Where the trees are large in diameter, as on the Pacific Coast, the cutting up of the logs may be done by gasoline engine driven cross-cut saws and the logs are frequently of 32 foot length.

To transport the pulpwood from the forest either to the water courses or to the railroad, the methods follow the logging practice of the region.

In the Northeast where the timber is small and the winters are severe, horse-drawn sleds are being rapidly replaced by steam or gasoline tractors with trains of sleds of large size. Instead of loading the sleds by hand or horsepower, gasoline loaders or steam skidders and loaders are used. Similar equipment is used for loading the cars where railroads are used instead of rivers for transporting the pulpwood to the mill.

In the Far West and South where there is little winter, or where there is no winter logging, the transportation is done by means of gasoline trucks carrying the loads or by tractor-drawn vehicles.

### Measurement of Pulpwood

For the measurement of pulpwood the cord of 128 cubic feet stack measure, or some local variation, is used very generally, not only for 4 foot wood but also when it is in longer lengths such as 8, 12 and 16 foot.

In many sections of the country, however, the measurement is by log rule which gives the estimated quantity of lumber which may be obtained in terms of board feet. As there is a wide difference in the log rules and in the solid wood content of a stacked cord, it is interesting to note that in one of the Canadian provinces at least the cubic feet solid wood measurement is established as the basis for pulpwood measurement when in longer length than 4 foot.

The News Print Service Bureau has also adopted the *cunit* or 100 cubic feet of solid wood as the unit of measurement in the mills of its members. Since the Bureau includes in its membership not only practically all of the manufacturers of newsprint paper on the North American Continent, as well as some others, it is to be expected that before many years the cord measure and the log rule measure will be displaced by the solid wood measure.

Although an effort was made to establish the measurement of pulpwood on the dry weight, calculated from the gross weight and the moisture content, this method did not receive much practical support. It is understood, however, that at least two mills, one in the Middle West and the other on the Pacific Coast, purchase part of their wood supply on a tonnage basis.

### Saw Mill Waste as Pulpwood

In very recent years there has been a growing tendency towards complete forest utilization, either by uniting the lumber mill and pulp mill or by close cooperation between them.

While in North America there may be more, there are at least four pulp mills which operate entirely on the saw mill waste, slabs, edgings and short ends, or use this material in considerable proportion. Apart from these there are a few others which purchase slabs from neighboring saw mills. In general the use of saw mill refuse is to be found in kraft mills where cleanliness of the wood is not such a vital necessity as in sulphite.

### Preparation of Pulpwood

The preparation of the pulpwood consists of cutting into blocks, the removal of the bark and other cleaning, the disposal of the refuse and where the wood is for chemical pulp, its reduction to chips for the digesters.

Except in a very few plants and on the Pacific Coast where the timber is especially large, the pulpwood is cut either into 2 or 4 foot blocks before the bark is removed. If of small diameter this is done with slasher saws, a gang of three to five saws, or if the logs are large, on a single-cut saw carriage.

### Barking

As in the old days there is still a considerable quantity of pulpwood that is hand-peeled even where the bark has no value for tanning purposes. It may be said, however, that standard practice is to remove the bark by mechanical means whereby there is a minimum loss of wood.

Just at the time the intermittent tumbling barking drum was coming into use in several plants to displace the rotating disk knife barker, several new designs of knife barkers to decrease labor cost as well as the wood waste were invented. Almost immediately, however, the intermittent type of barking drum was displaced by those of continuous operation and it soon resulted in the relegation of the knife barker to be an auxiliary for the final cleaning of the wood before sending it to the pulp mill or the chippers.

In more recent years a number of machines have been invented by which the logs for lumber or pulp might have their bark removed before being sawn. One of these designed for pulpwood sizes has been in commercial use in three mills and is built for the market by a leading machinery manufacturer. The industry is still waiting for the commercial application of a machine for barking sawlogs so that the slabs and edgings may be furnished to the pulp mill freed from bark.

It may be reasonably said that the chief retarding factor to the use of such material for pulp has been the expense of cleaning it as well as the labor cost for handling. If supplied already cleaned its low cost and mechanical methods of handling might offset its other disadvantages.

While there are still some who object to the use of drum barkers on the score of the wood not being as clean as if rossed with knife barkers, the fact that they are now in use by mills making the highest qualities of pulp and paper is sufficient evidence of their general satisfaction. The reduction in the waste of wood by approximately 10 per cent over knife barkers is undoubtedly the chief reason for their increasing application.

### Bark Presses

With the use of barking drums where the refuse is saturated with water, it was soon found that the mills had to face a disposal problem. As a result pressing equipment was developed whereby the wet bark might be utilized as a fuel.

Bark presses of three general types have been designed and are in general use. One type consists of a series of roll presses, one is a combination of crusher and press, while the third is a reciprocating plunger somewhat similar to a horizontal baling press. Of each type there are several modifications but the general result is to reduce the moisture content to approximately 50 per cent. After pressing, the bark is delivered to furnaces specially designed for burning wood refuse.

A recent invention by an eminent Swedish engineer is worthy of note in this connection. The wood refuse after being pressed to 50 per cent moisture, is delivered to the top of a tower where, in passing downward, it meets the hot waste stack gases from the boiler plant which are delivered to the bottom of the tower. The result of the contact under controlled conditions is that the moisture in the wood refuse is reduced to about 30 per cent which is approximately that of seasoned wood. From the tower the refuse is delivered to the boiler furnaces for the generation of steam.

## Mechanical Pulp

The most marked advances in mechanical pulp manufacture have been: first, the rapid changes in the grinding equipment, and second, in the application of methods for the control of quality of the product.

With the increased size of plants thought was given to increasing the size of the units to avoid the large number of small grinders needed. Even with the application of electric motors to grinding the earlier practice was to pattern the layout after a waterwheel driven installation and to attach six or more three- or four-pocket grinders for 24 inch wood to each power unit.

Then was developed the two plunger magazine grinder built to accommodate 4 foot wood. While each magazine represented in output the production of three of the small grinders, their design made possible a very considerable saving in hand labor.

After the magazine grinder had apparently become the standard equipment for large plants, the continuous grinder was designed which has apparently superseded it. Like the magazine grinder it uses grindstones to accommodate 4 foot pulpwood but the grinding action is secured by a double series of chains by which the column of wood is continuously pressed downward against the face of the revolving stone. The chief advantages claimed are a uniform power load and, in consequence, a more uniform quality of product.

While magazine grinders, as well as those of the continuous type, have generally been adopted where size of plant and power conditions are suitable and where the product is for newsprint manufacture, the mills making mechanical pulp of particular quality for special papers have not adopted them, believing that pocket grinders lend themselves to more accurate control.

### Stones

Even with the small pocket grinders which use stones of 27 inch face and 54 inch diameter, there was considerable experimentation with grindstones made artificially. The dream of the pulp maker has long been to have a grindstone not only of uniform grit and texture but one which would retain its character of surface without change.

With the development of the larger size units using stones of 54 inch face and 60 to 62 inches in diameter, the difficulty of securing natural stones of this size, their expense, and also the loss from accidental breakage, made the stone problem a still more urgent one.

After a number of types of artificial stones of reinforced concrete construction had been designed, a leading firm in United States making abrasive wheels developed a segmental pulp grinding wheel. This is made by fitting dovetailed segments of a special abrasive material on a central wheel, with its abrasive surface taking the place of the grindstone. Several of these artificial grinders have been in use commercially for nearly two years with extremely satisfactory results both as to quality of product and continuity of operation.

### Freeness Control

In the control of the quality of mechanical pulp is recognized to lie the uniformity of the quality of the paper made from it.

After a number of years of experimenting with different methods by which the mechanical pulp might be examined with a view to quality control, the freeness test was settled upon. By this method a sample of the pulp of known fiber density is allowed to drain in a standard instrument. Roughly the rate of the rapidity of the drainage of the water from the pulp suspension is taken as the measure of the freeness. The sharper the grindstone or the coarser the grit the higher will be the freeness.

The greatest value of the test is probably to determine the uniformity of the pulp.

It is safe to say that there is no pulp mill of any size on the continent but which makes use of it as a control test. The Forest Products Laboratories of Canada in particular have applied their energies towards developing a standard instrument and standard procedure for making the test, so that the mills may be in a position to compare their results on a uniform basis.

In the work done by J. H. Thickens and G. C. McNaughton, U. S. Forest Products Laboratory, 1910 to 1913, at the experimental plant at Wausau, Wis., is to be found the first basic in-

formation on the grinding of wood and the factors which affect the quality, rate of production and the power consumption.

### Screening

Centrifugal screens have long since displaced those of the flat diaphragm type. More recently a system of selective screening has been adopted whereby the pulp from the grinders, after dilution to a regulated density, is passed through at least three screens with successively finer perforations in the plates. The selective screening and the regulated consistency are the two chief points worthy of record.

In the latest developments in screen equipment, emphasis is placed on the lowered power required per ton of screened pulp, and the high capacity per unit, thereby economizing space.

### Refining

The rejections, at least from the finer screens, are passed to a refiner which reduces this material to a similar condition as the regular pulp. With the refiners, of which there are several types, complete utilization of the wood is secured. Generally it may be said that without refiners where the coarse material is wasted there is a loss of 5 to 6 per cent of the wood.

### White Water

In the pulp mill the true function of water as a conveyor is recognized by the most advanced mills. As a result only sufficient fresh water is added to replace that which passes on to the paper machine with the pulp. In this way there should be no discharge of white water in the mill effluent.

## Chemical Pulp

In general the digestion of chemical pulp is by introduction of steam into the digester which contains the wood and the cooking liquor. It has become quite generally recognized that the chief function of the steam is as a carrier of heat. In some kinds of chemical pulp, especially sulphite, the steam serves also as a means of circulation.

Although until quite recently the control of digestion was by observing the temperature and pressure within the digester, and their rate of increase, it has lately become the practice to use a steam flowmeter on the steam line to the digester and to control the cooking by this means.

In the case of the alkaline processes, especially the soda and sulphate, where the black liquor is later evaporated for recovery of the active chemicals, it is the practice to heat the liquor externally and to circulate it by mechanical means through the digester. While it is understood that the same method has been used on sulphite digesters in Europe it has never been adopted here.

In all the chemical processes added reagents have been tried as catalysts, reducing agents or as deterrents to the solution of cellulose, in order to either increase the yield or to obtain a product more readily bleached.

Pulp engineers believe that ultimately it will be the practice to weigh the wood going into the digester so that the quantity of active chemical can be proportioned to the dry weight of the wood. Up to the present, however, this has been done only experimentally.

### Sulphite

While some engineers place great importance on the character of the base used in the preparation of the sulphite cooking liquor, and others on the desirability of the highest possible content of free sulphur dioxide, in recent years the sulphite mills have very generally settled down to calcium as the base and a moderately high cooking acid containing 5 to 5.5 per cent total $SO_2$.

Recent experimental investigations would seem to substantiate the desirability of magnesium as a base and a high concentration of $SO_2$ and it is possible that the older controversies may be revived.

In the equipment for preparing the acid liquor, the industry has apparently become standardized on the limestone tower system with rotary sulphur burners fed with melted sulphur. Burner gas coolers whereby the gas is washed and cooled by passing it through a direct spray, have been designed but so far as is known they have not been applied in the American industry.

### Digesters

A few digesters of 30 ton capacity have been installed but for several years the standard size is approximately 18 feet diameter, 50 feet in height, with a capacity of about 15 tons of pulp.

While a brick and concrete lining 5 to 7 inches, and sometimes 9 inches, thick is that generally used, a few digesters have been lined with a single course of thin brick and cement about 2½ inches thick. In the case of the thin linings the emphasis is placed on the larger digester capacity secured. A few digesters have been covered with insulation to prevent the loss of heat by radiation from the shell.

Probably the most valuable invention in recent years in regard to sulphite mill operation, is the cooking process whereby the relief liquor and gas with the heat carried are injected into a fresh digester charged with chips and liquor. Not only is there a direct saving of the heat otherwise wasted in passing through the relief coolers, but it is the contention of those using the process that a materially higher yield of pulp is secured and that it is of superior quality. Future possibilities in this direction may be expected in the recirculation of the relief gas into the same digester.

At the U. S. Forest Products Laboratory, R. N. Miller and W. H. Swanson have been carrying on some fundamental studies in regard to the sulphite process, which are worthy of the study of all sulphite engineers.

### Waste Liquor

In the sulphite process one of the largest unsolved problems is the utilization of the waste liquor which carries in it approximately half of the weight of the wood digested. When we remember that for each ton of sulphite pulp produced there is a ton of wood material in the waste liquor, and that in most localities must be discharged into the streams, we get not only an idea of the great waste taking place but also an appreciation of the stream pollution problem that is yearly approaching more closely.

Fortunately there are evidences that very soon it will be demonstrated in mills which have it forced on them as a disposal problem, that it is possible to evaporate the waste liquor and use it as a fuel at some slight profit to the plant.

While there should be higher uses for this wood material than burning it as a fuel, this would be at least a step towards utilization where it is now not only entirely wasted but carries with it a menace to the mills.

While the sulphite process is used almost entirely for digesting the coniferous woods of low resin content, it has been applied with some success to the hardwoods. The resultant product, when bleached, is identical in appearance at least to the bleached soda pulp and is used in the manufacture of high grade book paper.

A modification of the usual sulphite process, using soda as part of the base and with special control of the cooking, has been developed in Finland for use on the pines which carry a moderate amount of rosin. This process is now being tried commercially in a leading mill in this country. Should it prove successful here a fairly wide application may be expected, especially on jack pine which has become a problem in some parts of eastern Canada.

The enormous development of rayon or artificial silk in recent years has stimulated several of the mills making bleached sulphite towards the preparation of their product for this use. It is understood that the chief requirement is a pulp with a high percentage of alpha or resistant cellulose and that there be great uniformity.

### Soda Pulp

While this process, using caustic soda solution as a digestion liquor, is used to some extent for pulping both the long fibered

resinous softwoods and the hardwoods like poplar, gum, maple, etc., it is most generally used for the latter species. The result is that colloquially "soda pulp" is used to mean any bleached chemical pulp made from the hardwoods by whatever process.

For raw material some mills use the turnings and short ends from hub and spoke factories, the cores of veneer plants and similar material as well as mixed hardwoods.

In one plant a mixture of long fibered softwood and cottonwood is cooked and bleached together in the proportion desired for direct manufacture into book paper.

In this process, which is the oldest one of all, the chief advances, besides those mentioned in regard to chemical pulp, have been in regard to the recovery of the chemical. In most soda mills, after the black liquor is concentrated in multiple effect evaporators, it passes to rotary burners to form black ash which is leached for its sodium carbonate. The latest development is a furnace replacing the rotary, where the concentrated black liquor is burned free of its carbon. The fused soda ash then goes to the dissolving tanks where it is causticized. The heat of burning is utilized in a boiler which supplies more than sufficient steam for preliminary evaporation, so the net result is a material saving.

Other developments have been to utilize the carbon left after leaching the black ash. One method is to use it as a pulverized fuel for steam generation. The other is to treat it for production of activated carbon for filtering purposes.

In the causticizing process to produce caustic soda as well as in the sulphate process recovery operation, the latest methods used in alkali manufacturing plants have been applied. These consist of continuous causticizing and lime sludge recovery. The lime sludge then passes to a lime reburner whereby caustic lime is produced for reuse in the causticizing process.

### Sulphate Process

This process is applied almost exclusively to the digestion of resinous woods which are difficult to pulp by the sulphite process, although there are a few plants which operate on spruce. On account of its suitability for the resinous pines it is in the southern United States that we find its most rapid development in recent years. The product is generally used in its natural, unbleached color, which is a rich brown, to make the strong, tough kraft paper for wrapping purposes, bags and for the liner of test container board.

Recently some attention is being given to the possibility of preparing it so that it may be bleached at a reasonable cost and so used for book paper and finer grades.

On account of the fact that the wood used is highly resinous most mills recover the turpentine given off during the cooking while a few are equipped to recover the rosin also in liquid form by salting it out of the black liquor as a rosin soap.

In past years several plants have been put up in the South, based on the dual plan of recovering the naval stores and making paper pulp from the extracted wood. So far these have not met with complete success but engineers are still hopeful that the problem will be solved.

In the recovery of the chemical, efforts have been directed towards decreasing their loss in recovery, but much remains to be done. The "explosion" process is worthy of mention as it is a radical departure from the usual practice. Here the black liquor, after concentration, is atomized into the furnace previously heated. The black liquor carries sufficient carbon to support combustion and to fuse the chemicals it contains, besides giving off considerable additional heat which is applied to generate steam. While understood to be successful in operation, it is not known to be applied outside of the plant where it was developed.

In the usual plant there are few if any differences from the earliest installations, but radical developments are likely to be seen in the future.

One of the greatest objections to the sulphate process is the highly objectionable odors generated in the process. One way by which this objection may be mitigated or removed is by an application of the waste wood drier mentioned in discussing the preparation of pulpwood. The drier is fed with chips to be digested and the gases from the rotary burner are passed through them. In doing so it is said that the wood absorbs the vile odors and in addition recovers a considerable quantity of volatilized chemical.

In this, as in the soda process, continuous causticizing, lime sludge recovery and lime reburning equipment are used.

Besides the three chemical processes named there are several others in more or less commercial use and others which show promise. Such are those in which the active chemical is neutral sodium sulphite only, mixed with additional caustic soda, or with an addition of sulphur dioxide, depending on the character of the raw material or that of the pulp desired.

In some cases the quantity of chemical used is small so that no attempt is made to recover it, while in others it must be recovered.

A mixture of lime and sulphur is another process which has received some publicity recently as the "polysulphide process."

With all the modifications in more or less common use there is not the well defined distinction there once was. In the search for methods whereby new woods of different kinds may be digested, combinations of all sorts are being tried.

## Waste Paper

In pulping mixed waste paper as in the manufacture of container board, the most noticeable development is in equipment which is continuous in operation. There are large breakers into which the bales of waste are dumped and which are equipped with continuous extractors in addition to the defibering rolls. The refuse settles into a compartment from which it is cleaned at the end of the week.

The defibered stock may be thickened and passed through jordans for refining and after being regulated as to consistency, passes direct to the board machine.

For de-inking printed book and magazine paper, the standard method continues to be digestion with soda ash solution, either under slight pressure or in open tanks. Apart from improved apparatus for washing the stock free of the soap and carbon with minimum loss of fiber, there is little to record.

## Paper Manufacture

In discussing paper manufacture it will be necessary to deal with the stock preparation, or beating as it is usually called, under the chief classes of papers—newsprint, book, wrapping, etc.

### News

In this grade it may be said that there is no stock preparation in the most advanced mills. The pulp is ground or digested; it is then screened and thickened to the desired density. After it has been regulated to a known consistency, it passes through a proportioning and mixing machine where it receives, at the same time, the desired amount of dyestuff to make the paper of the proper shade. The mixture then goes to the paper machine. In some mills the mechanical pulp only is passed through jordans before mixing with the sulphite, but in general there is no stock preparation whatever.

### Book Paper

For book paper also in the most advanced mills, while there may be beaters, they serve the purpose merely of mixers for incorporating the fiber, filler, color, size and alum used. The only mechanical treatment the stock receives is in the jordan from which it passes to the paper machine. Where dry pulp in bales or rolls is used, it is defibered in a separate department and is moved in slush form to the mixing department.

### Wrapping Paper

In the manufacture of wrapping paper some of the newer installations have largely discarded the beaters except as mixers in preparation for the jordans where the stock receives its mechanical treatment. In other installations equally modern the beater is depended upon for stock treatment with but little burden placed on the jordan. In both classes of mills special equipment is gen-

eral. The jordans usually have special fillings which are of various designs. Sometimes there are several jordans in series, at other mills in parallel.

In the beater-using mills the designs of machine, as to both tub and roll filling, are many. The tendency is towards beaters that will circulate the stock of high density at a high speed, and also towards large capacity, 2,000 pounds or more, and to drive them by individual electric motors so as to have this means of control.

A similar tendency is seen in jordans, especially for sulphate wrapping paper where they are equipped with direct connected motors, sometimes of the synchronous type, of 300 horsepower.

In the control of both beaters and jordans, the freeness test is frequently used, and in many plants equipped with electric motors the ammeter reading is used for the same purpose.

### Specialties

It is only in specialty paper mills that it is the rule to use small beaters and to follow the old established practice of using a beater as a pulper, mixer and beater.

## The Paper Machine

It must be recognized that the present fourdrinier machine is not essentially different from its earliest design. The changes to be noted are chiefly those of greater size and vastly increased speed of operation.

Machines 234 inches wide are now common while several of 248 inches in width are being built.

The weight of the rotating parts, such as the drying cylinders, in order that there be sufficient strength for self-support, is enormous. One of the 248-inch machines being built has 46 drying cylinders 72 inches in diameter, each of which weighs over 14,000 pounds. The weight of the calender stack will be upwards of 70 tons, while the bottom roll 30 inches in diameter will itself weigh over 30 tons.

It is undoubtedly in order to secure the increase in the machine operating speed that most of the obvious changes to be noted have been made.

It is nearly twenty years since patents were secured covering the elevation of the breast roll so that the pitch of the wire might be in some relation to its speed of travel. Until approaching the expiration of the patents it was very generally believed that a pitched wire was necessary for securing a proper sheet formation when speeds over 500 feet per minute were used. It was then discovered that a pitched wire was unnecessary provided the pulp suspension was delivered to the travelling wire at a velocity equal to its speed. This nozzle velocity is secured by a specially designed slice or stock inlet, making use of the hydraulic head of the stock.

Another very important factor in satisfactory operation at high speed was the development of apparatus by which the density of the pulp suspension is maintained constant and also of apparatus whereby a uniform rate of delivery to the paper machine is secured. These devices are known as "consistency regulators" and "stock controllers."

### Sectional Electric Motor Drive

As a natural result of the refinements of the electric motor and speed control apparatus for it, the sectional electric motor drive was developed to supplant the engine or turbine and the belt or rope drive for fast running paper machines.

At the present time there are four systems of sectional electric drives which bid fair to displace all other forms of power on fast running machines.

As the speed was increased it was found desirable to apply anti-friction bearings on all essential parts of the machine, and several of the newer ones are so equipped throughout. At the same time much greater care has been taken in the balancing of all the rotating parts as well as in the character of the machine work.

As the speed became more than 600 feet per minute it became difficult to handle the paper manually between the sections when starting up or after a break. This difficulty led to the invention of a compressed air system to do this automatically, as well as a system of carrying-ropes to lead the paper through the drier stack.

As the speed has increased and automatic regulation has become customary, many of the machine arrangements formerly considered vital have been discarded one by one.

On newsprint probably the first part of the equipment to go was the dandy roll. Then the shake on the wire part was discarded and probably about the same time, instead of turning the sheet of paper at the second or third press, it was run straight through all the presses.

It is worth mentioning also that four machines making a high grade of book paper are being operated without deckle straps.

The suction couch and press which used to be considered unsuitable for high speed machines may be said now to be standard equipment on all types. The development of a continuous felt washer has had the result of increasing the productive time very materially by eliminating the daily washup period.

One of the improvements made necessary by the increased speed is the automatic reel for winding the paper, with the minimum loss of paper in changing reels.

On the fourdrinier part a number of different arrangements for quick changing of wires have been designed. One builder moves the entire fourdrinier part and in returning it is introduced into the endless wire as a hand is into a glove. Another design is very similar except that the fourdrinier part is moved in several sections instead of one. In spite of the increased size of the machines, with the aid of electric cranes it is frequently possible to see wires changed in less than 1½ hours.

In the machine operation much attention has been given to the principles of water removal on the wire, by the presses, and on the drying cylinders. Several of the concerns making felts and rubber rolls have made valuable studies in this regard in cooperation with leading paper mills. The result is that there is a much better understanding of the economic principles involved than heretofore.

The drying operation has also been studied by the leading paper engineers assisted by experts in the ventilation field. The result was the compilation of the Paper Drying Code whereby the efficiency of the drier part could be determined.

In the drying operation much has been done to secure uniform steam distribution and removal of the condensate and the air from the drying cylinders. Attention has also been given to the ventilation of the drier part and the removal of the vapor from the evaporation of the water from the sheet.

Quite recently measuring and recording instruments have been devised, whereby to secure not only a uniform moisture content in the web entering the driers, but also a product carrying a definite and uniform moisture content.

One of the most important steps towards the profitable utilization of heat formerly lost is the equipment whereby the ventilating air for the paper machine is heated by the hot, saturated vapor from the drier part. In connection with the heat economizer it is usual to hood the paper machine very closely so that the outgoing vapor may be maintained at approximately 80 per cent relative humidity.

In connection with the drying operation two machines of radical design have been built. One of them has the usual steam heated driers, but fewer in number, enclosed in a vacuum chamber and the drying is done under 26 to 28 inches of vacuum. The result is a very material reduction in space required for the paper machine, besides a much lower steam consumption for drying. In addition to the semi-commercial machine operated by the inventor, another commercial machine has been installed in a manufacturing plant.

The other drying machine mentioned has a drier part which consists of an insulated chamber through which the paper web is carried in five or more passes on carrying wires. The heating and the evaporation of the water are done by means of electrically

heated resistance elements inside the chamber. The vapor is discharged from the chamber under slight pressure, and consequently is somewhat superheated. As designed it is planned to utilize this superheated steam either in the preliminary heating of the paper or for other heating purposes. The paper passes from a narrow slit in the drying chamber to the calenders and reel in the customary way.

In the vacuum paper drier and the direct electric drier are two of the most radical departures from the usual practice, and their application to commercial paper manufacture will be watched with interest.

As has been stated, the wet part of the paper machine has not changed in any essential way since its early design. At the present time, however, there are indications that something entirely novel will be seen very soon in a machine for continuous sheet formation and water removal before drying. Experimental equipment has been in the course of development for a number of years by a very successful paper machinery engineer and inventor. At an early date it is promised that an installation will be made along commercial lines.

### Paper Mill Power Plant

The very general use of steam turbines for the generation of electric power and its distribution by electric motor are to be noted in the paper industry as elsewhere.

For steam generation the practice is also following that of central power stations with modifications to suit the plant conditions. Up to date paper mills operate the steam plants as separate producing departments and pay close attention to their efficiency and the cost per unit of steam and power. The necessity for measuring and recording instruments has also become recognized, not only for purposes of record but also as means of control.

Following the practice in central power stations, the latest developments in the use of powdered coal, fuel oil and natural gas are to be found in paper mill steam plants. On account of the fact that there is a constant demand for heated air for ventilating purposes, there is considerable future in the industry for equipment whereby use is made of the heat in the dry stack gases. Mention has been made of its use in drying the barking drum and other wood refuse, and in evaporating waste sulphite liquor for fuel purposes. It is also used for drying the coal to be pulverized and directly for preheating air for the furnaces.

It is in paper mills that is to be seen the widest application of the recently developed electric steam generators. This is undoubtedly because of the fact that paper mills which have developed hydroelectric power have at certain times more electricity than is needed for power. As, at the same time, the mills are frequently located where transportation costs on coal are high, it becomes economically possible to use the electricity to generate steam.

In a recent installation inspected, where the hydroelectric development has a capacity of 100,000 horsepower and the present demand for mechanical power is 50,000 horsepower, the rest of the electricity is used in the steam generators, enabling the mill to operate without coal.

Another recent development made by an eminent Swedish engineer is the high pressure steam accumulator. This device, which acts as has been aptly described like the flywheel on an engine, enables the boiler plant to be operated at a uniform load even when there is a wide but fairly regular fluctuation in steam demand. When the demand is low the boilers deliver the excess steam to the accumulator and when the demand is great the accumulator gives it up and assists the boilers. The accumulator is equipped with a very ingenious system of valves which operate entirely automatically.

Another important power development is being seen in the use of boiler plants of very high pressure and high back pressure, noncondensing steam turbines in conjunction with the steam accumulator and chemical pulp digesters. In such a case the steam used for digestion is from the exhaust of the steam turbine. There is one plant of this kind on this continent although not in a paper mill. It is expected, however, that it will soon be so applied.

On account of the fact that steam and power from steam enter so largely into the cost of manufacture of paper in an integral pulp and paper plant, the possible economies in steam plant operation are receiving very careful study on the part of the paper mill engineers.

### Importance of Technical Training

As can be seen from the foregoing paragraphs, the advances made in the industry in recent years are to be credited in a large degree to the work of the chemical and engineering knowledge that has been applied to the manufacturing processes and the operation of the plants. The industry of North America has recognized the value of technical training in pulp and paper, not only for the chemists and engineers, but also for the development of the workers in the plants.

Of all the achievements in the paper industry in recent years, in the front rank may be placed the undertaking which was completed during the year in the preparation of the set of textbooks covering the *Manufacture of Pulp and Paper*. The publication was financed by the paper industry of Canada and United States, and the work was prepared by men actively engaged in it. While the books were being prepared as texts for class and correspondence study, at the same time correspondence courses were arranged by several agencies, and hundreds of students working in the paper mills were enrolled. Although vocational study of this kind has been in force for only a short time, the beneficial effects in the plants are plainly seen.

Several of the states and provinces containing papermaking centers have established papermaking vocational schools where those engaged in the industry may broaden their education, thereby to improve their positions and become more valuable to their employers.

With the technical schools which have provided specialized courses in pulp and paper for their students, and the vocational education supplied by the correspondence courses and the textbooks, the paper industry has evidently recognized its responsibility that in making pulp and paper it must at the same time train its workers so that they will advance in skill with the progress of the industry.

## Good Progress on Crown Willamette Kraft Mill

The steel work is complete on the new mill of the Crown-Willamette Paper Company now under construction at Camas, Wash., and the contractors will start pouring concrete at once. This will be a kraft mill which when completed will cost about $1,500,000 with latest modern machinery.

It is expected to have the mill ready to turn out sulphate pulp by the next February, as the building contractors are to finish their work by Christmas.

Sixty tons of kraft pulp will be the approximate daily output. The Crown-Willamette Company has decided to extend its activities to wide manufacturing and distributing of wrapping paper and bags of all kinds, some heavy enough to carry cement.

The new building is a Class A type of reinforced concrete two and three stories high 82x322 feet.

## Beaver Company Soon To Start News Machine

The Beaver Wood Fibre Company, Ltd., Thorold, Ont., is making good progress in the installation of its new Fourdrinier and expects to have it in operation by about the middle of November. The machine is a 166-inch Pusey & Jones Fourdrinier with an approximate tonnage of 70 tons per 24 hours. The machine will be electrically driven and has all the most modern equipment. John Ball was recently made resident manager of the company.

# Big News Print Mill Starts at Corner Brook, Nfld.

## Newfoundland Power and Paper Co., Ltd., Makes First Paper in July Only a Little Over Two Years from Time When Construction Work Was Started—Plant Is Equipped with Four 234-inch Fourdriniers with All the Most Up-to-Date Auxiliary Machinery

Incorporated by Act of Parliament on July 13, 1923, the Newfoundland Power and Paper Company, Ltd., is the culmination of previous agreements for the purpose of manufacturing news print and other products. The development of this important organization entailed the construction of pulp and paper mills at Corner Brook, together with a complete town site and a large hydro-electric power plant at Deer Lake, some 32 miles from Corner Brook. Corner Brook is situated in the Bay of Islands on the main line of the Newfoundland Government Railways, about three miles below the mouth of the Humber River, a picturesque and delightful location. This river is one of the largest in the island, with an immense drainage area extending far into the interior and tapping two of its largest water systems, those of Grand Lake and Deer Lake.

### Paper First Produced in July of this Year

The general contractors, Sir W. G. Armstrong, Whitworth & Co., Ltd., of London, England, commenced actual construction of the hydro-electric plant and of the paper mills in June, 1923. Paper was actually produced in July, 1925, very little over two years having thus elapsed from the inception of construction to the production of the manufactured product. The paper mill has a capacity of 400 tons of news print per day and to produce this 180,000 cords of pulp wood are annually required.

The hydro-electric power plant at Deer Lake has a capacity of 100,000 horse power, all of which is transmitted to the mills at Corner Brook over four transmission lines. The flow of water for the power development is obtained from Grand Lake, which has now an area of 215 square miles and a draining area of 1,650 square miles. Grand Lake is being used as a storage basin or reservoir, and to increase its efficiency in this respect the level of the lake was raised 30 feet, increasing the superficial area of the lake itself by some 30 square miles. To convert the lake into a reservoir a reinforced concrete dam 800 feet long and 75 feet high, was constructed at Junction Brook, the outlet from Grand Lake into Deer Lake. The resultant "lifting" of Grand Lake flooded some ten miles of the railway line which ran along its northern shore and the railroad had to be diverted to a higher level and then carried across Junction Brook on the top of the dam, a remarkable engineering feat in itself. Then to carry the water from Grand Lake to the power house at Deer Lake, a canal had to be cut seven miles long and 30 feet deep, and 120 feet wide at the bottom, the sides sloping outward to a width of 200 feet at the top. The excavation and construction of the canal involved the removal of approximately 5,000,000 yards of earth.

### 2,000,000 Acres of Timber Limits

The lands held by the company total 2,000,000 acres, half of which are in the Humber River watershed, and the remainder located west of that valley along the railroad south to Cabot Strait, and in other parts of the West Coast. The company can, therefore, meet its requirements from three sources of supply and can secure a delivery of its logs at the mill site by train, or conveying them from other points by steamer or barge; and it can also purchase from holders of forest areas in other parts of the island. Its needs in this respect can, therefore, be regarded as adequately insured for many years to come.

About 2,000 men will be required for logging operations during the autumn and winter, and an effective organization has been created for handling these men, supplying them with all necessaries during the cutting season, and transporting the "cut" to the mills during the next summer, while steel tugs are under construction

PLANT OF THE NEWFOUNDLAND POWER & PAPER CO., LTD., CORNER BROOK, NFLD.

at Deer Lake and Grand Lake for towing the booms of logs in these areas.

## Thoroughly Up-to-Date Equipment

The mills themselves are among the very latest in the world, having every new feature of equipment which has justified itself. They are intended for the production of news print paper only, and attached to them are two large warehouses, 600 feet long by 135 feet wide, capable of containing 30,000 tons of paper each. The mills are themselves equipped with four paper-making machines of identical design, each producing a sheet of paper 132 inches wide, which is then cut into sizes as required, usually into three separate rolls.

It is understood that contracts for the consumption of the entire output in the United States have already been made, and the company has constructed two steamers of its own, named the *Humber Arm* and the *Corner Brook*, of, roughly, 6,000 tons to be used in the transportation of paper to the markets where the same is to be sold.

Coincidentally with the construction of the mills the company set on foot the construction of a town in the vicinity, for the housing of its operating force. As is the modern practice with companies of this character a town-planning expert of the highest standing was invited to undertake the task and he has provided for a town capable of extension, so as to accommodate 10,000 people, to which it is hoped Corner Brook may attain in a few years.

The New York agents of the Newfoundland Pulp and Paper Company, Ltd., are the Bowater Paper Company, Inc., of 342 Madison avenue.

The equipment of the various departments of the mill is as follows:

### Wood Preparing

#### Wood Receiving

Wood is received in three ways at Corner Brook. The majority of the wood is towed from the main booms at the mouth of the Humber River to the storage boom at the Mill, which has an area of 700,000 square feet. When desirable, vessels may discharge their cargoes of pulp wood directly into this storage pond. Provision is also made for unloading water-borne wood at the Company's main wharf and wood received by rail is handled by a conveyor in the Wood Yard, so arranged that the wood by rail may be sent directly to storage or to the Mill for barking.

#### Slasher Mill

2-Log Haul-ups for removing wood from the Storage Boom.
2-3 Saw Slasher Tables for cutting the wood to the standard length of four feet.
2-150 H.P. Motors, one for each of the combined log haul-ups and slasher tables.
1-System of Conveyors for delivering the wood from the Slasher Mill to the Wood Room.

#### Wood Room

6-Barking Drums, 30 ft. by 10 ft., chain suspension type with drums running in a vat of water.
6-75 H.P. Motors for Barking Drums.
1-System of Wood Conveyors for sorting and delivering the wood to the Chipper Room, Ground Wood Mill or Log Storage.

#### Chipper Room

2-84" disc chippers for chipping the wood in preparation for the manufacture of Sulphite Pulp.
2-150 H.P. Motors for Chippers.
1-Chip Separator.
1-25 H.P. Motor for Chip Separator.
2-Oscillating Chip Screens for grading the chips to size.
2-5 H.P. Motors for Chip Screens.
2-Chip Crushers for reducing the oversize chips.
2-50 H.P. Motors for Chip Crushers.
1-System of Conveyors for conveying chips from chippers to Chip Separator, thence via Chip Screens to Chip Loft of Digester House.

#### Wood Yard

2-Structural Steel Stackers 132 feet high and 250 feet long for storing the wood.

The Wood Yard is protected from fire by means of 18 Monitor Nozzle Fire Towers from which powerful streams of water may be played on any part of the Log Pile.

### Sulphite Mill

#### Acid Plant

3-Sulphur Storage Bins—capacity 900 tons each, 25'6" dia. by 40 ft. high.
1-Suspension Platform Scale for weighing sulphur.
3-Rotary Sulphur Burners each complete with Combustion Chamber and sulphur melting pan.
1-5 H.P. Motor for Sulphur Burners.
1-Two Tower Acid System, complete with Gas Cooler, Acid Towers, Gas Fan and Acid Pumps.
1-Raw Acid Tank 24'0" dia. by 28'0" high, capacity 78,000 gals.
2-Recovery Acid Tanks 25'0" dia. by 38'6" high, capacity 96,000 gallons each.

#### Digester Room

1-Chip Loft with capacity of 200 cords of chips.
4-16 ft. by 50 ft. Digesters, capacity each Digester 14 tons.
2-Acid Pumps, each 2500 gallons capacity per minute.
4-Relief Coolers—cooling surface total 280 square feet.

#### Blow Pit Room

4-Circular Blow Pits 24'0" dia. by 28'0" high, each having capacity of 30 tons with drainage bottoms of perforated tile.
1-Stock Circulating Tank, located under floor of Grinder Room.

### Groundwood Mill

#### Grinder Room

18-Continuous Feed Grinders arranged in units of two, using wood four feet long. Grind stones are 62 inches in diameter by 54 inches long.

9-2600 H.P. 3100 KVA Synchronous Motors, each motor drives one unit of two grinders. The additional KVA capacity is used for correcting Power Factor of induction motor load. Each motor has an automatic load governor for maintaining constant load conditions on the motor and constant grinding conditions on the grinder. The motors are direct connected through a flexible coupling to the grinder shafts and revolve at 231 r.p.m.

### Stock Screening and Preparation

#### Coarse Screening

2-Rotary Coarse Screens 5'0" by 12'0" for Sulphite.
1-10 H.P. Motor—Sulphite Coarse Screens.
4-Rotary Coarse Screens 5'0" by 12'0" for Groundwood.
1-20 H.P. Motor for G.W. Coarse Screens, 750 r.p.m.
4-Vertical 7000 gallon centrifugal pumps for pumping sulphite and groundwood to the Fine Screens.
4-300 H.P. Vertical Motors for Stock Pumps.

#### Fine Screening

6-Centrifugal Fine Screens for Sulphite.
2-Centrifugal Rescreens for Sulphite.
1-Centrifugal No. 2 Screen for Sulphite.
1-300 H.P. Motor for Sulphite Screens.
15-Centrifugal Fine Screens for Groundwood.
2-Centrifugal Rescreens for Groundwood.
1-Centrifugal No. 2 Screen for Groundwood.
2-300 H.P. Motors for G.W. Screens.

### Dehydrating

4-Sulphite Dehydrators.

22-Groundwood Dehydrators. Dehydrators have cylinder molds 48 inches in diameter by 120 inches face.

1-35 H.P. Motor for Sulphite Dehydrators.

2-75 H.P. Motors for Groundwood Dehydrators.

### Stock Regulation

2-Automatic Consistency Regulators, one on G.W.; one on Sulphite.

2-Regulated Sulphite Storage Chests, capacity 7 tons of pulp each.

2-Regulated G.W. Storage Chests, capacity 7 tons of pulp each.

3-Auxiliary Regulated Stock Storage Tanks, each capacity 40 tons of pulp.

### Refining System

1-Kollergang for Refining Number Two Sulphite Stock for use on Board Machine.

2-Jordan Refining Engines for refining Number Two G.W. Stock for use on Board Machine.

## Paper Mill

### Machine Room

There are four paper making units, all identical. Each is capable of producing 100 tons of finished paper per twenty-four hours when running at capacity. Each unit consists of:

1-Automatic Stock Mixing and Metering Machine, where the Sulphite and Groundwood are mixed in the correct proportions. Colour is also added at this point to give the correct shade to the paper.

1-Machine Chest—16 ft. diameter by 13 ft. high.

1-6" Stock Pump, pumping to Stock Regulator Box.

1-Constant Speed Shaft driven by 350 H.P. motor and driving 1-18" Centrifugal Mixing Pump, 3-8" Rotary Vacuum Pumps, 1-6" Rotary Vacuum Pumps, 1-4" Rotary Vacuum Pumps.

3-Rotary Machine Screens, where the final screening is given

Control Room, Corner Brook

to the Stock before it flows on to the Paper Machine.

1-234" Paper Machine consisting of:

Fourdrinier Section—72 ft. wire, 36" suction Couch Roll.

Press Section—3 straight through Presses, top rolls of granite, bottom press rolls rubber covered.

Dryer section, 32-6 ft. dia. dryers and 4-5 ft. felt dryers.

Calender section, bottom roll 32" dia., second roll 20" dia., upper rolls 16" dia.

Reel—Upon which the paper is wound on leaving the calenders.

Winder—where the paper is cut and trimmed to the correct roll sizes required by the customer.

1-Electrically interlocked paper machine drive. The D.C. Power for each Harland Drive is supplied from a Motor-Generator set consisting of 800 H.P. 600 r.p.m. Synchronous Motor and 500 K.W. 265/440 Volt D.C. Generator, separately excited. Each drive equipment consists of 3-75 H.P. and 4-150 H.P. motors and an eight panel remote controlled switchboard, all located in a separate

Power House, Deer Lake

drive room at the back of each paper machine. The control of all the D.C. Motors is from the front of the paper machines.

### Broke System

2-Broke Beaters.

2-Triplex Plunger Stock Pumps.

2-Trim Blowers.

2-150 H.P. Motors.

2-Jordan Engines.

### Saveall System

1-Inclined Wire Saveall System for recovery of stock from White Water.

1-Triplex Plunger Stock Pump.

### Heating and Ventilating

Located in Monitors over the Drive Rooms are the Heating and Ventilating Fans for the Paper Machines. There are for each Paper Machine:

2-Supply Fans, capacity of 60,000 cubic feet of air per min.

2-75 H.P. Motors, one for each fan.

2-Exhaust fans for removing the moist air from over the Dryers of the Paper Machines, each fan has a capacity of 60,000 cubic feet of air per minute.

2-30 H.P. Motors, one for each.

2-Heat Economizers, Briner type, one for each combined exhaust and supply fan unit for utilizing the heat in the moist air, being exhausted, to warm the incoming air.

### Finishing Room

2-Electric Trucks for conveying the paper from the Paper Machines to the Finishing Tables.

1-90 inch Rewinder.

2-Self Reading Weighing Scales.

4-Heading Machines.

2-Delevators for lowering the paper to the Warehouse Conveyors.

1-Core Making Machine.

1-Core Kiln.

1-Cut Off Table for Cores.

1-Core Clip Press.

BOARD MACHINE ROOM

1-Beater for beating and mixing Number Two stock for the Board Machine.
1-84" Wet Machine.
1-Jordan Engine.
1-Machine Screen.
1-120" Fourdrinier Type Board Machine, consisting of Fourdrinier Section, 3 Presses.
14-5 ft. dryers, 2 calender stacks, 2 drum reel and winder.
1-Sheet Cutter.
1-Guillotine.

## Warehousing and Shipping

WAREHOUSE

Each Warehouse is 594 feet long and 135 feet wide. In each there is:
1-Paper Conveyor for bringing paper from Finishing Room to Warehouse and for carrying paper from Warehouse to Wharf.
2-High Speed Electric Travelling Cranes.

WHARF

The Wharf is 39 ft. wide by 1200 ft. long and is arranged to facilitate the rapid loading of paper. At the same Wharf are arrangements for unloading coal and sulphur. The depth of water some 28 ft. at low water is sufficient to enable vessels of 10,000 tons to berth safely.

SHIPPING

For the purpose of exporting the 120,000 tons of paper manufactured each year, the Company owns two specially built vessels each with a carrying capacity of 5000 tons of paper. The ships have the following principal dimensions.
Length over-all 438 feet, moulded breadth 56 feet, draft loaded 26½ feet, speed 12 knots.

## Steam Plant

BOILER HOUSE

2-25000 Kilowatt Electric Boilers, capable of producing 160,000 lbs. of steam per hour.

POWER HOUSE, DEER LAKE

4-500 Boiler Horse Power B. & W. Boilers.
4-Underfeed Stokers, capable of operating the boilers to peak loads of 250 per cent. Two of these are arranged with Dutch ovens for the burning of refuse.
2-Forced draught fans, each 60,000 cubic feet capacity. One of these is arranged to be driven either by electric motor or by steam turbine, the other by electric motor only.
2-Centrifugal electrically driven boiler feed pumps.
1-Weir Steam driven boiler feed pump.
4-Hotwells.
1-Steam Accumulator 13 ft. by 65 ft. capacity of 30,000 lbs. of steam in storage.
1-Suspension type coal bunker, capacity 350 tons of coal.
1-Coal Crusher.
1-Coal Conveyor to Coal Bunker.

COAL YARD

The Coal Yard has a capacity of 30,000 tons of Coal.

PIPE LINE, DEER LAKE

1-Coal Conveyor from wharf to storage, capacity 100 tons of coal per hour.
1-Drag Scraper for spreading coal in storage and reclaiming same for use in the Boiler House.

## Shops

Repair Shops, comprising Machine, Electrical, Blacksmith, Pipe, Tinsmith, and Wood Working Shops are installed and capable of dealing with all normal maintenance and Repair Work.

## Mill Water Supply

Fresh water is obtained from the Corner Brook, the Intake being located just below the Glynmill Inn. Water from the Intake is conveyed to the Mill by gravity in a 36 inch pipe line after which it is pumped by 3-7500 gallon electrically driven pumps to the Mill distribution piping for process uses.

## Fire Protection

A complete fire protection system is installed supplying adequate protection to all parts of the plant. This takes the usual form of hydrants, fire hose valves and sprinklers supplied by 3-2500 gallon high pressure centrifugal fire pumps. In addition, connection is made to the Townsite which maintains full pressure on the lines at all times.

## Electrical Features of the Mill

CORNER BROOK SUBSTATION

12-4000 KVA single phase 60,000/4,600 volt step-down transformers for electric boilers.
7-5500 KVA single phase 60,000/2300 volt.
4-2000 KVA single phase 60,000/600 volt step-down transformers for power.
1-350 KVA 3 phase 2200/550 volt auxiliary transformer.
2-Electric steam boiler banks each 32,500 H.P.
33000 H.P. installed in 2200 volt 3 phase motors including 9-2600 H.P. synchronous grinder motors and 5-800 H.P. synchronous motors for paper machine drives. A total of 30-2200 volt motors.

8000 H.P. installed in 550 volt 3 phase motors, ranging from 1 H.P. to 150 H.P. Total number of 550 volt motors 260.

Main Switchboard consists of 44 vertical panels, besides a four panel benchboard, two panels for control battery and two relay panels.

13-60,000 volt oil circuit breakers.

61 low tension oil circuit breakers, 2200 volt to 600 volt. All oil circuit breakers are electrically operated.

Over one mile of ¾" iron pipe size copper tubing was used for the 60,000 volt bus bar. Over 23 tons of copper bars were used for the low tension bus bars.

Fibre conduits in sizes from 2" to 4" over 10 miles and over 30 miles iron conduits. Length of copper cables and wires over 100 miles.

All lighting at 110 volt with 2000 lighting outlets and sixty panel boxes.

An auxiliary plant consists of a 400 B.H.P., 214 R.P.M. Diesel Engine direct coupled to a 280 K.W. 550 volt, 70 per cent P.F. alternator and 20 K.W. exciter and a separate four panel switchboard.

### Hydro Electric

#### Deer Lake Power House

Total capacity 100,000 H.P. continuous.

7-14,000 H.P. 375 R.P.M. Horizontal type spiral casing Francis Turbines each direct coupled to a 10250 KVA. 95 per cent B.F. 50 cycle 6000 volt alternator with direct connected exciter. A 20 ton flywheel 12 feet in diameter is inserted between the turbine and the alternator.

7-10250 KVA 3 phase, 6000/66000 volt step-up transformer. Each alternator and the step-up transformer form a unit.

7-Penstocks each 4,000 feet long, through which the water flows to the turbines; the upper 2500 feet being of wood stave construction of 9'6" internal diameter, and the lower section of rivetted steel plate.

4-Oxide film lightning arresters.

An auxiliary plant consists of a 400 H.P. 214 R.P.M. Diesel

Glynmill Inn

Engine with direct connected 280 KVA, 550 volt alternator, 80 per cent P.F. alternator and exciter.

Head on Turbines 250 to 265 feet.

#### Transmission Line

4-3 phase 66000 volt circuits carried on two latticed steel tower lines. The conductors are 211,000 C. M. steel cored aluminum cable, vertical spacing 6 ft. Length of line 32 miles. Pin type insulator.

#### Utilization of Water

The flow of water for the power development is obtained from Grand Lake which has an area of 215 square miles and a drainage area of 1650 square miles. From this an average yearly flow of 5000 cubic feet per second is available.

Due to the large seasonal variations in the flow of water from this area Grand Lake is being used as a regulating storage reservoir with a capacity of about thirty thousand million cubic feet. To control this huge reservoir a hollow reinforced concrete Dam 800 feet long and 75 feet high was constructed at Junction Brook now called "Main Dam." The Dam has a spillway with a capacity of 26,000 cubic feet per second for the purpose of discharging the occasional heavy floods which occur. This consists of 18, 15 foot wide electrically operated sluiceways. Due to the increased height of Grand Lake which is raised some 30 feet by this Dam a diversion of the Railway was necessary and it is carried over Junction Brook on the Dam.

Townsite, Showing Hotel, Corner Brook

To convey the water from Grand Lake to Deer Lake Power House a canal seven miles long was built. To regulate the flow in the canal, which is closely controlled there is at the Intake Works a series of easily controlled gates.

### Townsite

A modern Townsite has been laid out and a large number of homes have already been constructed to house the employees. Adequate supplies of pure drinking water, proper sewage disposal and other facilities make the Townsite an ideal place. A fully modern hospital has been also recently completed and put into service. In addition, the Company owns and operates a fine Staff Hotel, the Glynmill Inn.

Careful thought has been given to the layout of the Town to provide facilities for its growth and the present scheme provides for a Town of a population of four to five thousand.

### Some Interesting Features of Construction

#### Mills

In June, 1923, the whole of the 40 acre area upon which the Mill and Pulp Wood Yard now stands was tidal water and no wharf or other facilities were available.

The Shipping Wharf, involving the cutting and driving of 1600 lumber piles, was constructed during the first summer and the first steamer was berthed on the 22nd August, 1923. Since that date 173,000 tons of material have been received at this wharf, and transported by rail or otherwise to its required destination. The mill area was reclaimed by excavating 450,000 cubic yards of gravel from the bank situated to the south of the Newfoundland

Government Railway and a sufficient quantity had been tipped to allow piling for the mill foundations to be commenced on 30th July, 1923. With the exception of the two Paper Storage Sheds, all the Mill foundations are carried on Raymond Concrete Piles and the total number driven for this purpose amounts to 3,200. The paper storage sheds are carried on timber piles and involved the cutting and driving of 8,000 piles.

Foundations were sufficiently advanced to allow erection of structural steel work to commence on 2nd November, 1923, and all work was carried on continuously during the winter months. The total amount of structural steelwork erected amounts to 5,700 tons.

The majority of the Mill buildings are constructed of reinforced concrete on the structural steel framework and the amount of concrete in foundations and walls amounts to 30,000 cubic yards, including 700 tons of steel reinforcement.

### Power Development

Main Dam contains 29,000 cubic yards of concrete. To accomplish its construction 19,000 cubic yards of excavation was necessary, formwork aggregating 600,000 square feet was constructed and 400 tons of reinforcing steel was placed.

### Canal

The excavation and construction of the canal involved the moving of approximately five million yards of earth.

### Intake Works and Forebay

These required about 80,000 yards of excavation and the pouring of 34,000 yards of concrete.

### Power House

The Power House is 400 feet long by 80 feet wide. Like the Mill Buildings it is reinforced concrete structure on a structural steel framework. The foundations are of massive concrete, penetrating to a depth of 26 feet below ground level, the excavation for which amounted to 98,000 cubic yards, and the total concrete in the Building to 23,000 cubic yards.

# Hinde & Dauch Paper Company Improves Ft. Madison Plant

In March, 1922, the Hinde & Dauch Paper Company, of Sandusky, Ohio, began to operate its new Fort Madison, Iowa, straw paper mill erected adjacent to the old Brown Paper Company plant which Hinde & Dauch interests had acquired some two years earlier.

This new plant was equipped with a Downingtown Mfg. Co., 146 inch Fourdrinier machine of such capacity as to provide for larger demands made upon the Company for straw paper for corrugating purposes.

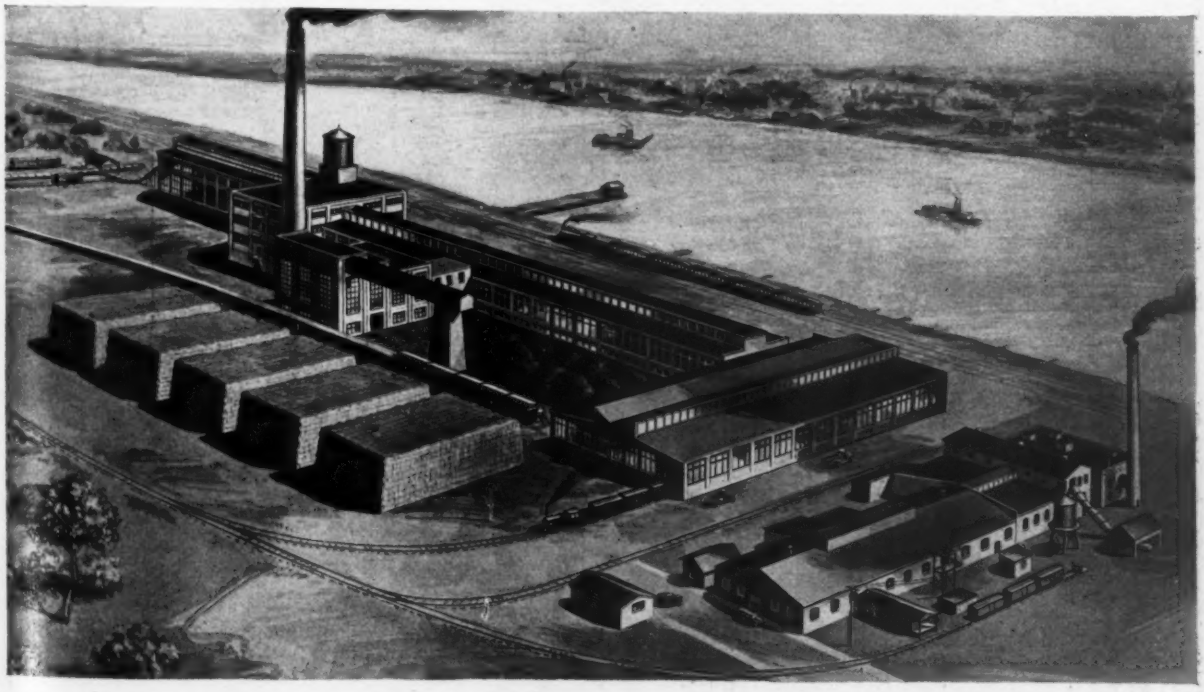
Within the year six new rotary boilers have been installed, making eighteen in all. Three additional large beaters have also been provided, bringing the total number of beaters up to ten. Additional washers of special construction are used for the preparation of stock for the beating operation.

By these additions the departmental production of the mill is thoroughly balanced and the plant enabled to operate to its full capacity of eighty tons daily.

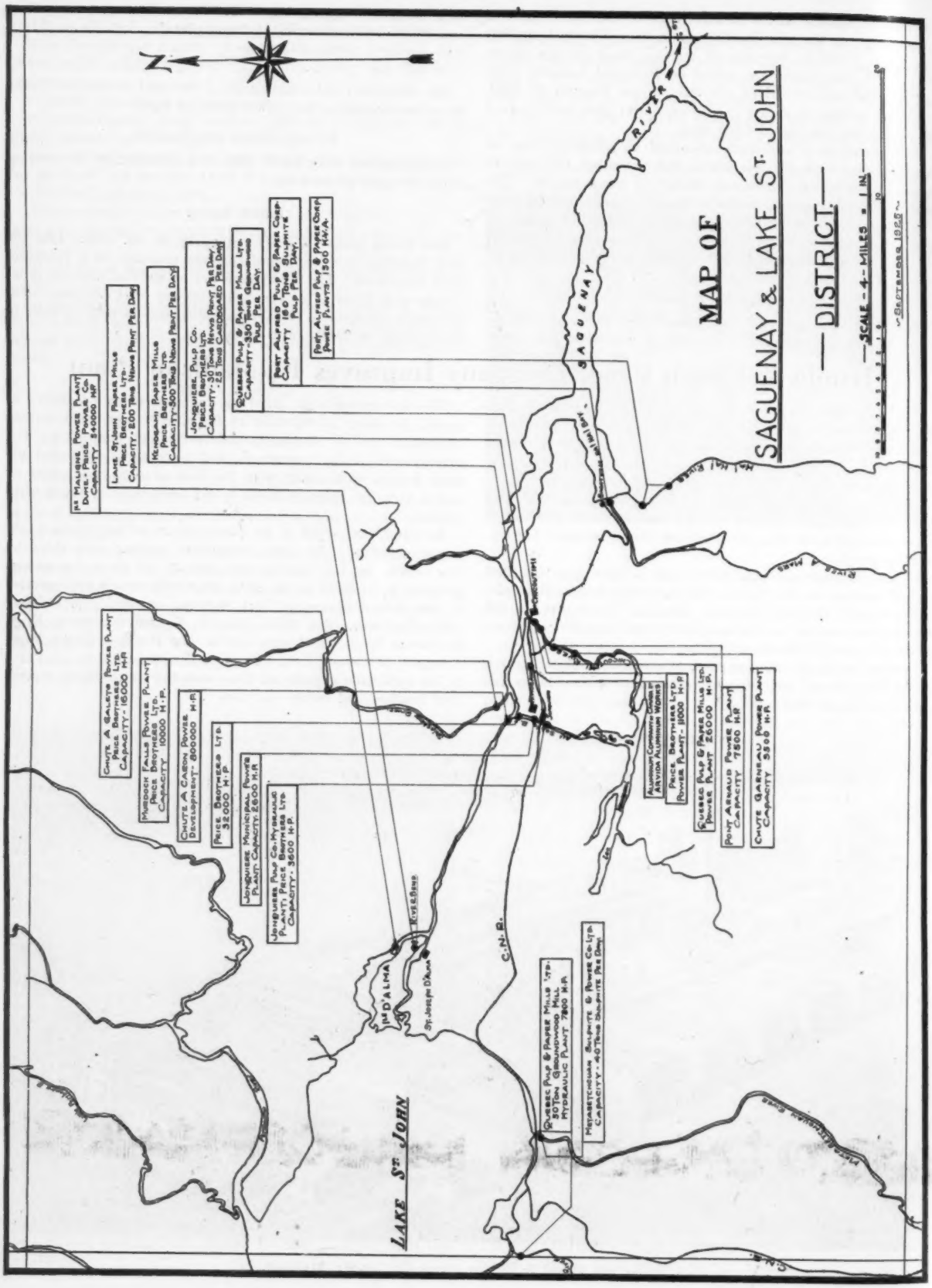
This mill embodies the latest improvements in the production of paper. Its power is generated by the most modern steam turbine equipment and is electrically distributed and controlled. The arrangement of its departments and processes is such that the stock travels continuously with the least possible expenditure of power, from the point of intake to the store room of the finished product.

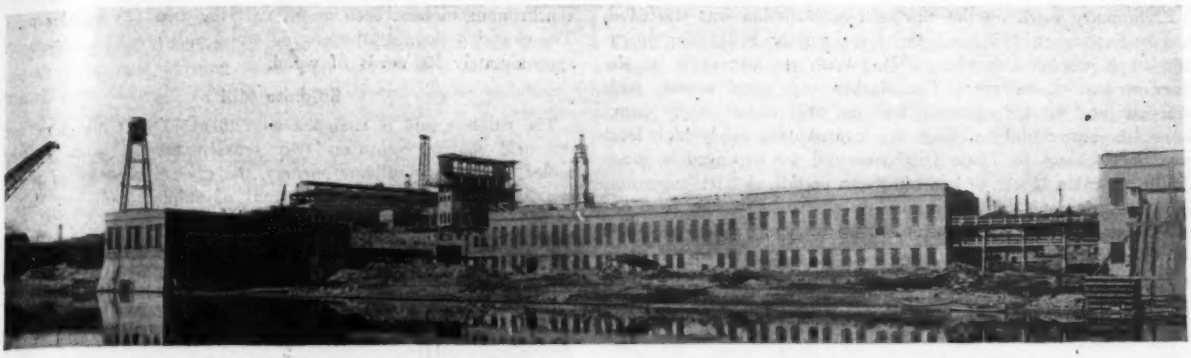
As stated, the output of the plant consists of light straw board for corrugating. The same commodity, together with chip and jute boards for box making and indented felt paper for various purposes is produced in the eight other mills owned and operated by the same Company at Fort Madison, Muncie, Ind., Delphos, Ohio, Sandusky, Ohio, Watertown, N. Y., and Gloucester, N. J., as well as by its allied organization, The Hinde & Dauch Paper Company of Canada, Ltd., located at Toronto, Ont.

The total daily capacity of these well distributed plants exceeds four hundred and twenty-five tons.



Plant of the Hinde & Dauch Paper Co., at Ft. Madison, Ia.


MAP OF
SAGUENAY & LAKE ST. JOHN
— DISTRICT —
SCALE - 4 - MILES = 1 IN.
SEPTEMBER 1925
SAGUENAY RIVER
LAKE ST. JOHN
CHICOUTIMI
JONQUIERE
ARVIDA
ALUMINUM COMPANY OF CANADA
ARVIDA ALUMINUM WORKS
PRICE BROTHERS LTD
POWER PLANT - 11000 H.P.
QUEBEC PULP & PAPER MILLS LTD.
POWER PLANT 26000 H.P.
PORT ARTHUR POWER PLANT
CAPACITY 7500 H.P.
CHUTE GARNEAU POWER PLANT
CAPACITY 3500 H.P.
PRICE BROTHERS LTD
32000 H.P.
JONQUIERE MUNICIPAL POWER
PLANT CAPACITY 2600 H.P.
JONQUIERE PULP CO. HYDRAULIC
PLANT, PRICE BROTHERS LTD.
CAPACITY - 3600 H.P.
CHUTE A GALETE POWER PLANT
PRICE BROTHERS LTD.
CAPACITY - 16000 H.P.
MURDOCH FALLS POWER PLANT
PRICE BROTHERS LTD.
CAPACITY 10000 H.P.
CHUTE A CARON POWER
DEVELOPMENT - 800000 H.P.
ST. MALIGNE POWER PLANT
DUKE - PRICE POWER CO.
CAPACITY - 240000 H.P.
LAKE ST. JOHN PAPER MILLS
PRICE BROTHERS LTD.
CAPACITY - 200 TONS NEWS PRINT PER DAY
KENOGAMI PAPER MILLS
PRICE BROTHERS LTD.
CAPACITY - 300 TONS NEWS PRINT PER DAY
JONQUIERE PULP CO.
PRICE BROTHERS LTD.
CAPACITY - 250 TONS NEWS PRINT PER DAY
- 250 TONS SULPHITE PULP PER DAY
QUEBEC PULP & PAPER MILLS LTD.
CAPACITY - 350 TONS GROUNDWOOD
PULP PER DAY
PORT ALFRED PULP & PAPER CORP.
CAPACITY - 150 TONS SULPHITE
PULP PER DAY.
PORT ALFRED PULP & PAPER CORP.
POWER PLANTS - 1300 H.P.
QUEBEC PULP & PAPER MILLS LTD.
STONE SULPHITE MILL
HYDRAULIC PLANT 7800 H.P.
MISTASSINI SULPHITE & POWER CO. LTD.
CAPACITY - 40 TONS SULPHITE PER DAY.
ST. JOSEPH DAM
C.N.R.
C.P.R.



GENERAL VIEW FROM RIVER SHOWING SLASHER, WOOD ROOM AND PUMPING STATION OF RIVERBEND MILL IN MIDDLE FOREGROUND

# Price Bros. & Co., Ltd. Complete Riverbend Mill

## Present Equipment Provides for an Output of 200 Tons of News Print per Day with a Possible Ultimate Expansion to a Capacity of 600 Tons Daily—Machine Room Contains Two 234-inch Walmsley Fourdriniers Driven by Harland Sectional Drives.

When the decision was made in late 1922 to proceed with the first hydro-electric development on the upper section of the Saguenay River, to be undertaken by a combination of interests headed by the late J. B. Duke and Price Bros. & Co., the latter company formulated a plan providing for the large expansion of its news print producing capacity, intended to extend over a period of some years.

These plans provided first for the expansion of the Kenogami Paper Mills, from their producing capacity at this time (1922) of 300 tons per day to a capacity of 500 tons per day, by the installation of two (2) 234 inch paper machines and the enlargement and alteration of all other departments of the Kenogami Mills with a view to making them wholly self-contained and to arrange for groundwood slush production adequate for the continuous supply of the larger paper mill requirements.

Construction on the Kenogami Mills extension started in April, 1923, and was completed late in 1924, and this plant is now operating at a capacity of 500 tons per day.

### Design by Geo. F. Hardy

The second item on the program of expansion was the construction of an entirely new mill, to be located on the Upper Saguenay River and to utilize wood from limits owned and operated by the company on watersheds tributary to Lake St. John. The design of this mill was done by George F. Hardy, New York, and the construction work carried out by William I. Bishop & Co., Limited, and by Price Bros. & Co., Ltd.

The site selected for the Riverbend Mill is located on the Little Discharge of the Saguenay River, immediately adjoining the existing town of St. Joseph d'Alma and within two miles of the Isle Maligne hydro-electric plant owned by the Duke-Price Power Company. Construction on this power development started in January, 1923, and is now practically completed, eight of the ultimate twelve generator units being installed.

### Ultimate Capacity 600 Tons Daily

The Riverbend Paper Mill of Price Bros. & Co., Ltd., is designed with a view to possible ultimate expansion to a capacity of 600 tons per day, but the present development, described below, provides for an output of 200 tons per day. A block of land, with water frontage on the Little Discharge, sufficient in area to provide for the ultimate expansion of the mill to the capacity above noted, was acquired by the company and has been organized and incorporated as a separate municipality.

GENERAL VIEW OF MILL SITE SHOWING RIVER STRUCTURES AND MAIN MILL BUILDINGS IN BACKGROUND

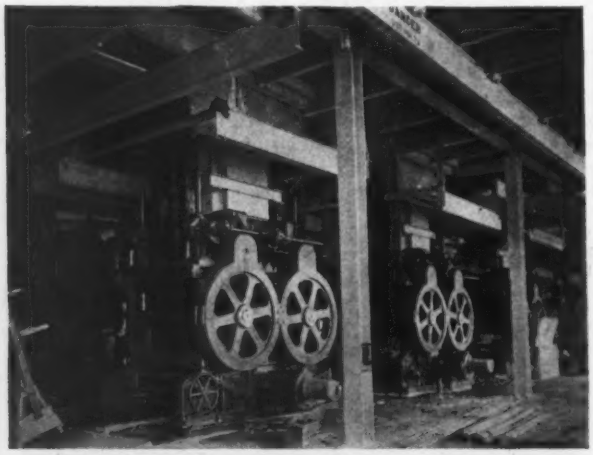
VIEW SHOWING ARRANGEMENTS OF WOOD ROOM AND PORTABLE STACKER

Preliminary work on the new mill construction was started in August-September, 1924, and the plant will be ready for operation in November-December, 1925. With the exception of the river structures, namely: The slasher and wood rooms, with conveyor and stacker systems, and the mill water supply pump house, the entire mill buildings are located on a fairly high level area overlooking the Little Discharge and are arranged in practically one main block, so laid out as to permit of later expansion with the minimum of disturbance or alteration to the first development. All the plant structures are of steel frame and brick and tile or brick wall construction. The footings for all main building walls and heavy equipment foundations were piled.

### Slasher and Wood Rooms

The Slasher and Wood Rooms, located at the River's edge, comprise one (one) 15 foot log haul-up and one (one) 4 foot auxiliary haul-up, the former serving a three-saw slasher. Slashed wood is delivered by a multiple flat chin conveyor to three 10 x 30 foot Paulson type, barking drums, located within the Wood Room proper, in which space has been left for a fourth similar drum unit. The wood room arrangements have been designed with a view to handling all lengths of wood from 14 feet to 4 feet, and the slasher saws are set at 50 inches, for which length the magazine grinders, with which the groundwood mill is equipped, are designed. Sorting conveyors, disc barkers, chippers, chip crushers and chip screens are located within the main wood room building, and a system of wood, chip and wood-waste conveyors lead from the wood room building to the wood storage area and direct to the groundwood mill, sulphite chip bins and boiler room, respectively. The wood storage area has a possible capacity of 150,000 to 160,000 cords, should it ever become necessary to utilize the total storage space.

The mill water supply is provided for by a pumping station located at the edge of the river, closely adjoining the wood room, and equipped with screen filters, electrically-operated turbine pumps and emergency steam fire pump. The present pumping station building allows for ample accommodation for any possible later expansion.



VIEW SHOWING OPERATING FLOOR ASSEMBLY OF VOITH CATERPILLAR FEED GRINDERS

The main block of mill buildings is laid out for continuous straight-line movement of manufacturing processes, with the ground wood mill and sulphite mill at one end and the paper finishing and shipping shed at the opposite end.

### Ground Wood Mill

The ground wood mill provides accommodation for fourteen Voith Caterpillar Feed Magazine Grinders, of which twelve units are now installed. These are to be driven by 2,500 h.p. 225 r.p.m. synchronous motors, each motor carrying two (2) grinder units. The charging floor of the ground wood mill provides storage for approximately 500 cords of wood.

### Sulphite Mill

The sulphite mill is equipped with three 15 foot digesters, and the acid system comprises two Jenssen towers, with Jenssen cooler, and rotary sulphur burners, the present capacity of which installation is approximately 70 tons of sulphite pulp per day.

INTERIOR OF PAPER MACHINE ROOM SHOWING ASSEMBLY OF TWO 234" WALMSLEY MACHINES. GALLERIES CARRYING BRINER ECONOMIZER AND VENTILATING EQUIPMENT SHOWN AT EITHER SIDE

The screening and deckering systems for both sulphite and ground wood are laid out to provide for a gravity movement in each case. The washed sulphite pulp from blow-pits is pumped to knotter screens located on a third floor of the screen and decker building, dropped thence to standard rotary screens, thence to sulphite thickeners. Similarly, ground wood from the bull screens is pumped to ground wood knotters and follows a similar course, through screens and deckers, to the deckered stock chests in the basement. Ample provision has been made in the design of all stock chests and pulp storage to insure a safe margin of slush pulp supply for paper mill requirements in the event of a temporary breakdown in either pulp mill.

### Paper Machine Room

The paper machine room, immediately adjoining the screen and decker building, accommodates two 234 inch Walmsley machines, with a rated capacity of 100-110 tons each per day. These machines are driven by Harland electric sectional drives, the installation for each machine comprising eight motors, controlled as to speed regulation by the Harland System; and the winder of each machine is operated by a D.C. motor with a separate speed control. The driving motors are located on the back side of each machine and a mezzanine gallery immediately above carries a Briner ventilator and economizer installation for each machine, each comprising four exhaust and intake fans, with economizer unit. The paper machines are equipped with suction couch roll, three solid presses and thirty-six 6 foot dryers. These machines are designed to operate up to a speed of 900 feet per minute.

### Finishing and Shipping Rooms

Finishing room and paper shipping room, with train shed, are straight-line extensions of the paper machine room.

Mill stores and mill machine shop, including carpenter shop, blacksmiths' and tinsmiths' shop and miscellaneous repair departments are accommodated in a one-story extension adjoining the paper finishing and shipping rooms.

### Boiler Plant

The boiler plant, which, at present, will be equipped with three wood-waste or coal burning units, and two electric boilers, the latter of approximately 3,200 b.h.p. capacity each, is located near the digester building. A Ruths steam accumulator is a feature of the boiler plant.

Electric substation and locomotive shed complete the list of buildings, these two being separate structures.

The Riverbend Mill will draw its power requirements, both for mill operation, including grinding, and for electric boiler operation, from the Isle Maligne Plant of the Duke-Price Power Company. Power will be transmitted to generator voltage (13,200 V.) direct to mill substation for transformation and distribution to the various operating departments.

### Residential Section

A part of the area acquired by the Company for this development has been reserved as a residential section, and housing accommodation has been provided for a certain part of the operating staff of the mill. This will include the men's boarding house, with accommodation for approximately 50 men; the staff residence, with accommodations for from 30-35, and a number of one-family dwelling houses, differing in size and type of architecture. As previously noted, the mill property immediately adjoins the Village of St. Joseph d'Alma, with a present population of approximately 2,000.

Municipal services, including the water supply, sewage disposal and domestic lighting, have been provided for in the townsite development.

### Wood Supply

As previously stated, the wood supply of the Riverbend Mill will come from limits tributary to Lake St. John, and the company operates a fleet of tugs and launches on Lake St. John which provide for the delivery of wood from the outlets of the various rivers on which lumbering operations are carried on to the Little Discharge, and thence to the log pond at the mill site. A small dam, located some distance below the mill site, provides for regulation of pond level and affords capacity for spilling excess water at flood season, although the regulation as provided for by the hydro-electric development of the Duke-Price Power Company insures against any very heavy flow on the Little Discharge during flood seasons.

### Up to Date Features

The design of the Riverbend Mill and the selection of operating equipment for this plant has been based largely on the company's past experience in news print manufacturing, and the plant is intended to embody, as far as possible, all the best features of manufacturing practice as these have been proved to date. It may be of interest to note that, among the new features embodied in this mill, all the mill electric motors, with the exception of the 2,500 h.p. Grinder Motors, are of ball-bearing type. It is also of interest to note that the mill is designed to operate entirely by electric power; i. e., not only will all mechanical power requirements be supplied from this source, but all the steam requirements of the mill will be produced in electric steam generators. Although a number of coal or waste-burning boilers have been installed, these are intended, primarily, to utilize wood-room waste, and to serve as emergency stand-by equipment if required. This is, perhaps, the first large news print mill to be completely electrically operated to the extent indicated above.

### To Begin Operation in December

The mill will commence operation in December, 1925, under the management of H. Monro, who, for the past twelve years, has held the position of general electrical superintendent of the Kenogami Paper Mills and who has recently been appointed resident manager of the new plant.

## Champion Coated Paper Co. Moves Into New Office

The Champion Coated Paper Company has recently moved into its new office building, which is one of the finest paper mill offices in the industry, being made of limestone, full walnut trimmed throughout inside, rubber floors throughout, and marble lobby. The whole building is controlled ventilation with the system of washed air and thermostatic control of temperature.

NEW OFFICE BUILDING, CHAMPION COATED PAPER CO.

The office comprises the departments of executive control, laboratory, hospital, employment department, mill management, treasurer, cashier, time office, mill manufacturing department offices, inspection office, sample department, mill waste prevention department, traffic department, and general sales department.

There are seven acres of new buildings being erected at the present time, at these mills, and this addition comprises the new finishing room, over 300 x 700 feet in area, for the calendering, cutting, sorting and trimming of coated papers. This addition also

NEW STORE, CHAMPION COATED PAPER CO.

includes warehouse space for nearly five times as much warehousing as heretofore, and for the loading of twenty freight cars inside the mill at one time, away from weather conditions. It also includes a fine employees' grocery store and merchandise department which replaces the one already in use for the past 4 or 5 years.

The new addition also includes a twenty-four hour cafeteria which will serve at one time nearly three hundred persons at tables.

# Reading Mills Make Extensive Improvements

## Two Plants in Which Reading Rag Book Papers Were Made Consolidated—Machine Which Was Removed Was Entirely Rebuilt Under Direction of Engineers of Pusey & Jones Co.—Change Aimed to Bring About Efficiency, Economy and Improved Quality

The Reading Paper Mills will celebrate its sixtieth anniversary in 1926. They have been making rag book papers continuously since 1866, in which time quality and uniformity of product rather than quantity production has been their aim and ambition. In producing rag book papers, care and time are prime factors and absolute necessities for a quality product. Their record over a period of sixty years, maintaining the high standards of quality, is an enviable one.

### Turning Point in Company's History

However, the year 1925 marks a turning point and is, perhaps, the most important year in their history, for in this year, without changing in any way their ideal of quality, they have made a change and a consolidation in their plants which is, perhaps, the most important step ever taken by this old established concern.

Reading rag book papers were made in two mills—the Penn Street Mill, situated in the heart of the business district of Reading, next to the Pennsylvania passenger station, and the Packerack Mill, a mile and a quarter below, on the east bank of the Schuylkill. Each of these mills contained one machine, together with its necessary beating and refining equipment, independent finishing rooms, and the duplication of machinery which necessarily comes in a divided plant.

### Penn Street Mill Dismantled

It was decided to dismantle the Penn Street Mill, which was the original plant of the Reading Paper Mills, to move the eighty-inch machine which that mill housed to the Packerack Mill, and to carry out the consolidation not only in the machine room, but also in the finishing room, the beater room and the rag room. To effect this change it was necessary to build an addition to the machine room, which was the first construction undertaken. The machine room has been widened so that it houses the two machines with more than ample space on either side of the machines and with large windows on either side. The machine which was moved was entirely rebuilt and set up under the direction of the best engineers of the Pusey & Jones Company, so that in its present state it is practically a rebuilt machine. When the Packerack Mill was rebuilt in 1888, ample space was provided in the beater room, as George F. Behr, president of the company at that time, foresaw such a consolidation. The beaters and Jordans were accordingly housed alongside and in front of the former beaters.

### Excellent Water Supply

The question of water supply was the most serious one which was made in the consolidation. James M. Miller, vice-president and general manager of the Reading Paper Mills, who has been with the company since 1886, spent his boyhood in Reading and recalled the time when the city was practically undeveloped and a stream running through a small valley located about where the Packerack Mill now stands. He was convinced that if shafts were sunk an ample supply of artesian well water could be obtained. After making seven borings, two large sources were tapped, with the result that 400 gallons per minute of spring water, splendidly adapted to rag papers, was obtained. New pumps were installed and this additional supply was made available. It water has been analyzed and has been found to be of the purest quality, free from iron and other elements which would necessarily have to be eliminated before use. The drinking water used in the mill is taken direct from these springs without filtration.

The finishing room was large enough to contain the entire equipment and, without reconstruction, calenders, sheeters, etc., were installed. The handling of rags, however, necessitated building an entirely new plant; consequently, a four story brick and concrete building was erected, the three upper floors of which are used for sorting and cleaning rags and the first floor and basement for storage and draining.

### Handsome Mill Offices

As the office of the mill was in the abandoned building, new quarters had to be provided and, consequently, a modern brick building to harmonize with the rest of the plant was constructed at the north end of the mill, next to the new rag building. Like the rest of the buildings of the Reading Paper Mills, the exterior is unprententious, but the interior shows the richness of mahogany furniture and partitions, and is done in colonial style, which makes it one of the handsomest mill offices in the country. The arrangement with an entrance into the mill itself is such that no department is disturbed or interrupted by the work of any other department, or by visitors, who are taken from one office to another, into the mill.

### Book Paper Made Exclusively

The combined production of the two machines is 15 tons daily. The mill makes only book paper, from Bible weights up, both wove and laid, antique, English finish and super. Its coating plant was dismantled in 1924 and it was decided to concentrate on book. The company's watermarked brand, Louvain Book, is on the market at the present time, and its deckled edged mill brand, called Bodleian, will be on the market in several weeks.

This consolidation, while it does not increase the tonnage, has brought about efficiency, economy and improved quality, due to the fact that the entire manufacturing is done practically under one roof. Better supervision, without duplication of effort, and closer contact with every process, will maintain for many years a reputation for quality which has always been enjoyed by the Reading Paper Mills.

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## Parsons Paper Company Install New Machine

The Parsons Paper Company, the oldest paper company in Holyoke, Mass., having been established in 1853, has just completed the installation of an 84 inch machine. This makes the equipment two 84 inch and one 98 inch machines, instead of one 68, one 84 and one 98 inch; in other words, this new machine replaces the 68 inch formerly used. From a paper-making standpoint this will be a decided improvement, as dandy-rolls of the two 84 inch machines and equipment, will be interchangeable.

The machine will be electrically driven as are the others.

The new machine was made by the Rice, Barton & Fales, Inc, and is up-to-date in every way.

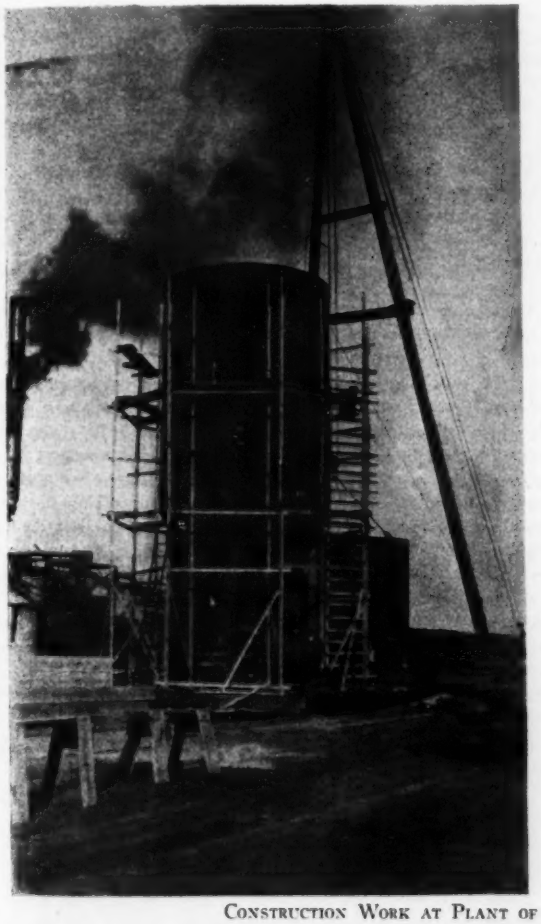
It is recalled that when the mill was built some forty years ago the price of the two machines then installed, was a total of $26,000. Anyone thinking of buying a machine in these days will find a decided change in price and will now be obliged to pay for a single machine something like three times the cost of the original two.

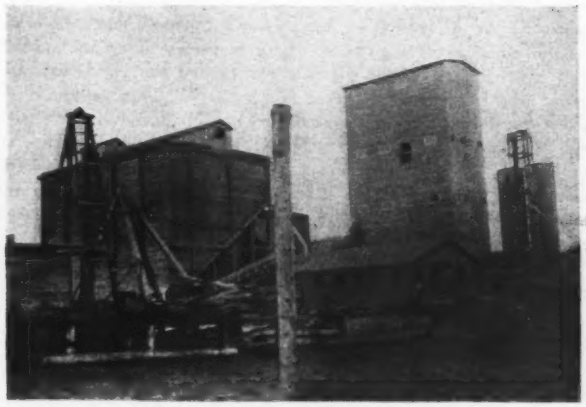
The demand for the well-known brands of Bonds and Ledgers of the Parsons Paper Company has been such that the mill has run full time for years and with the new equipment will be in better position than ever to supply the needs of its many customers.

# Fidalgo Pulp Mfg. Co. Starts Sulphite Pulp Mill

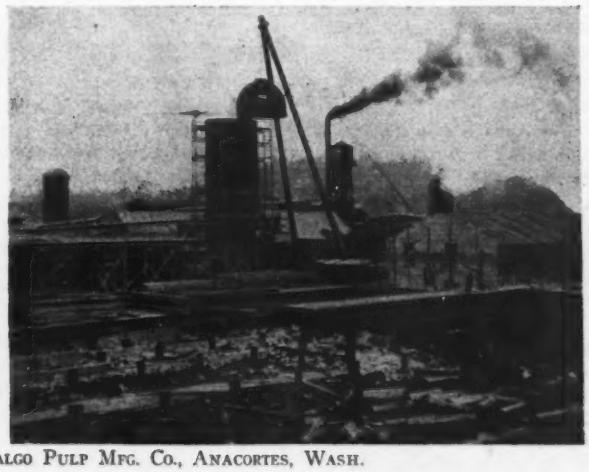
## Waste Wood Bought by the Ton from Box Manufacturers — Digester Building Planned for Two Digesters, Although Only One Has Been Installed with Capacity of Twenty-Five Tons Daily—Unique Equipment Designed To Meet Unusual Conditions

The Fidalgo Pulp Manufacturing Company of Anacortes, Wash., was organized to utilize the long trimmings in box making plants on Puget Sound. For some years R. S. Talbott, vice president and general manager of the company had been impressed with the large quantity of this waste, especially in Puget Sound sections where there are several mills, each of them cutting one hundred fifty thousand feet of lumber per day, all of which after being thoroughly air dried, is manufactured into box boards. These mills in this section are producing many times more box boards than is produced in any other section on the American continent. Because the wood was uniformly dried and practically all barked and being of an even thickness, approximately one inch, Mr. Talbott felt it would make an ideal raw material for sulphite pulp because it is all hemlock, spruce and white fir. The





PLANT OF FIDALGO PULP MFG. CO.



CONSTRUCTION WORK AT PLANT OF FIDALGO PULP MFG. CO., ANACORTES, WASH.

only objection to the use of this wood was that for chipping purposes it would have to be turned with the grain and some of the smaller pieces might not handle readily in the chipper. This problem has been worked out and the company is making as good a chip as any mill on the Coast.

When the Fidalgo Pulp Manufacturing Company expressed a desire to locate at Anacortes, the city of Anacortes proceeded to put in a large filtration plant, supplying the pulp mill with good filtered water at a reasonable rate.

The plant is located adjoining one of the lumber mills, the Morrison Mill Company, and a very favorable long term contract for steam was entered into with this mill. The only question about buying steam from a saw mill is the possibility of the mill closing down for a long period of time owing to market conditions. The company, however, felt safe in this respect because the Morrison Mill Company's records show that it has been operating for over twenty years and not once during that time has it closed down for lack of orders or poor business.

### Wood Bought by the Ton

An interesting feature of the use of this wood is that it is perfectly feasible to buy it, as the company does, by the ton because it is uniformly dried and the box board mills will not take the lumber into their plant until it is thoroughly air dried. The company finds that it takes a little less than three tons of wood to make an air dried ton of sulphite. These three tons include the waste that is thrown out because of bark or bad black knots, etc. On account of the wood coming in the shape it does, it was

not necessary to install any sawing or barking equipment; what few pieces of wood have bark on the edges are sorted out. While the present plant produces twenty-five tons of sulphite per day, the amount of material produced by box board mills with which the company has contracts is sufficient for fifty to sixty tons daily capacity. The use of this wood does away with the necessity of investment in timber lands and capital tied up in logs or pulp wood, both of these items being carried by the saw mills with which the company has long term contracts.

### Wood Handling

The wood is received from the sawmills in trucks and barges and delivered by conveyors to the top of a large bunker which holds five hundred tons of wood. On top of the bunker is a long building housing a wide belt conveyor and while the wood is being conveyed two men sort out any rotten pieces or pieces with bark on. At the bottom of this bunker a conveyor takes the wood to the wood preparing room where it passes along on another belt conveyor on which the wood is turned the right way and given any further sorting that is necessary. This conveyor delivers the wood to two special chippers manufactured by the Carthage Machine Company, Carthage, N. Y. The chips are delivered by a screw conveyor and bucket elevator to a Carthage revolving saw dust screen and into a coarse shaker screen. They then are taken by a Buffalo Forge slow speed fan and delivered to a large chip bunker located on the grounnd alongside of the other bunker. This bunker holds about three hundred tons of chips. From the chip bunker the belt conveyor delivers the chips as they are made to a slow speed Buffalo Forge Company blower which delivers the chips to the top of the digester building into a chip bin which holds approximately fifty tons of chips or about one digester charge.

### Digester Building

The digester building was built for two digesters, but only one was installed for the present. The digester is 17 feet in diameter by 56 feet long. It was built by the Puget Sound Machinery Depot, Seattle, and is made of 1 9-16 inch steel plate, triple riveted, double butt strapped and the joints of all butt straps, inside and cutside of the digester, were electrically welded. It was tested by Hartford Steam Boiler Inspection and Insurance Company, and the digester was bottle tight with cold water pressure at the top of digester of 150 pounds. The digester was lined with a standard Stebbins Engineering and Construction Company lining.

### Acid Plant

The equipment in the acid plant consists of two towers, 60 feet high by 9 feet, 6 inches inside diameter made of 4-inch Washington fir staves and lined with 4-inch fir blocks. The sulphur burner is a Glens Falls Rotary burner with a special combustion chamber and standard horizontal lead pipe cooler. Gas is delivered to the towers by a direct connected aluminum fan. For reclaiming the gases in the digester relief, a small tiled tower and lead pipe cooler are used.

The equipment in the screen room consists of several horizontal pulp storage tanks, improved Paper Machinery Company knotter screen, Baker Centrifugal and New Success flat screens. After screening, the accepted stock passes through a riffler to a double press Rogers Wet Machine. This machine is so equipped with felts and rolls that a continuous sheet of pulp is delivered from it, instead of allowing the pulp to accumulate on the last press roll and being cut off into laps.

### Handling the Pulp

The continuous sheet of pulp is delivered to a continuous chamber dryer which consists of a heavy wire apron conveyor passing through a chamber into which hot air is delivered from coils by means of several fans, this hot air circulating in a spiral form through steam coils and taken through the pulp.

It was found that this pulp could not be dried in flat sheet or in creped condition because it was not sufficiently porous to allow the air to circulate through it. A simple arrangement has been installed for shredding the wet sheet pulp which is about 45 per cent air dry and delivering the pulp in uniform small pieces of such size and so arranged on the dryer conveyor that the air can readily circulate through it.

This shredded pulp is delivered at the other end of the drying machine in a bone dry condition and is taken by a belt conveyor and delivered into a continuous horizontal baling press. The pulp is discharged from the press in bales of the approximate dimensions of 32 inches by 18 inches by 16 inches, weighing about 125 pounds each. The pulp in this form is almost ideal for furnishing to beaters because it is very dry and immediately absorbs water and because it is delivered to the beater in such small pieces that the power consumption and the time required for refining are greatly reduced.

### Rail and Water Shipping Facilities

The company has both deep water and rail shipping facilities, sulphur being delivered by steamer and lime stone by barges.

The digester was built in the shops at Seattle and shipped in five complete sections, three straight and two cone. These were delivered alongside the plant on barges and the sections hoisted into place by means of a heavy "A" frame.

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## Big Improvement at Continental Rumford Mills

Since the acquisition by the Continental Paper and Bag Mills Corporation of the paper and pulp mills at Rumford, Maine, early in 1924, many notable improvements and changes have been made.

Among these are changes in the paper machines resulting in increased production, improved qualities and uniformity of output.

The beating and jordaning capacity has been greatly extended, increasing the Kraft tonnage of this mill so that at present it is one of the largest Kraft mills in America.

In the development of a growing business on converters and industrial papers, including Kraft and Sulphite specialties, machine glazed and Fourdrinier, in a wide range of colors, it was found necessary to establish a modern, fully equipped chemical laboratory at the mill under expert direction, thereby greatly contributing toward the maintenance of quality standards, color uniformity and the meeting of technical requirements in the manufacture of papers limited to particular uses. A new sizing system has also been put into operation.

A most important addition to this porperty consists of the installation of two Yankee machines fully equipped for the manufacture of machine glazed Kraft and machine glazed Sulphite papers, tissues and specialties including bleached M. G. papers. These machines have a range in weight of from 8½ lb. to 60 lb. inclusive and produce 80,000 lbs. of paper daily.

Facilities and equipment for finishing both rolls and sheets have been considerably enlarged.

In conjunction with the paper mills, a printing plant and a plant for decorating papers are operated, the scope of these departments having been greatly extended by the purchase of additional equipment during this period.

These mills now produce a total of 225 tons daily of Kraft and Sulphite bag and wrapping papers, plain, printed and decorated; also machine glazed Kraft and Sulphite, bleached M. G. tissues and specialties, 140 tons of Sulphite and 50 tons of Ground Wood.

The rebuilding of this mill in the East, together with the location of the company's mills elsewhere in New England, in New York State, Pennsylvania and in the central west place the Continental in the forefront of manufacturers of paper products. The corporation is unusually well equipped to serve every requirement of the trade.

# New Pacific Mill Nearly Ready for Operation

## Pacific Straw Paper and Boards Co.'s Plant at Longview, Wash., Modern in Every Respect—Has Initial Capacity of 30 Tons of Paper Daily—Plans for Building Second Unit Under Way—Machinery Entirely New and Up-to-Date—Offices Conveniently Arranged

The builders of the Pacific Straw Paper and Board Company's plant, at Longview, Wash., conceived the project after an extensive, assiduous investigation. The result of their endeavors brought on the organization of their company and by December 1, this year, it is hoped that all will be in preparedness to start operations. Particularly so do the president and secretary feel jubilant over the prospect of early operations, over the future in store for their company, and over their accomplishments, since what they represent was long conceived, is now a reality, and will for many years be another monument to those essentials of success—Sturdiness and Rightness of principle.

### Buildings Most Substantial

The Pacific Straw Paper and Board Company will have an initial capacity of thirty tons daily but plans for the building of a second unit are under way. The first unit, they believe, when all departments are fully functionizing, will be one of the most modern board plants in the country. Inspection of materials used in construction work was rigid and all materials were rejected that did not meet their specifications for A-1 materials. The webbing together of these various materials into buildings was under the constant supervision of competent inspectors, hence their buildings are most substantial, are economically constructed and, with the gray steel colored cement, gray steel colored window frames, and the deep red tile, all the buildings are pretty to look at.

### New Machinery Throughout

The machinery is entirely new throughout. The paper machine is one of Shartle's best and now being all positioned for running, with trimmings, valves and other fixtures in uniform arrangement, encased in a well lighted, roomy building with the wonderful western sun forging through, commands a dignified, business-like appearance and would say, if it could speak, "I'm all dressed up and rearing to go." No less commanding, however, is the Erie Variable Speed Engine. On a cement foundation and floor this engine, groomed as a Kentucky Stallion, would, too, like to exhibit the excellent characteristics of its sire.

The line shafting of this plant is installed on the top of substantial, tapering re-inforced concrete pillars sunk deep into the ground and this, an innovation to board mills, should prove satisfactory and economical from every angle.

### Efficient Water Tube Boilers

Two water tube boilers, 150 h.p. each, standard equipment, Dutch oven for burning sawmill waste, have just been housed in with the best common and fire brick by a mason of long experience in this line of work, whose work has, however, throughout, been under observance, a precautionary measure to insure the largest number of heat units from a given amount of fuel consumed. Sawdust will be transported from huge saw mills, two miles distant, to fuel room and storage yard in a specially built rack car by the railway company. As early as possible this part of the railroad track will be elevated to about 15 feet so that this fuel can be dumped by the train crew and the engine take cars away with them and further, permitting fuel to be fed to fire box by gravity.

### Excellent Straw Available

Straw is available in a wheat zone of from five to forty miles from the plant and a greater abundance is available in many up-river wheat sections. The nearby straw, particularly, long fibered and unusually strong, is clean and will web into a very excellent texture with a pleasant looking tan color. A plentiful supply of waste paper is procurable at the many towns and cities of not greater than 55 miles distance. A greater tonnage is available in Tacoma, 120 miles, and Seattle, 155 miles distant. Sulphite pulp or ground wood is procurable at several large capacity pulp mills at from forty to sixty miles. These several raw materials can be transported by either water, rail, or auto truck, the Pacific Straw Paper and Board Company's plant is directly on all. While not yet publicly announced, it is authoritively said that the first of the new year will see the coming to Longview of a large pulp mill and from this mill the Pacific Straw Paper and Board Company will be able to obtain their requirements by truck daily. A pulp mill utilizing the waste of a big sawmill would be the logical thing to do.

The water supply for cooking and washing is voluminous, being piped from the Cowlitz River, a navigable stream, refreshed daily by snow water flowing over clean sand and gravel from the majestic Mount Adams, fifty miles to the East. This water, first tested and now used by the Long-Bell Lumber Company's many boiler units, assures almost scaleless boiler tubes, if not entirely so.

### Longview the Logical Location

The builders saw in Longview, Washington, the most logical location that could be found at any of the Northwest's most advantageous points. Cheap fuel for cooking and drying and reasonably priced electrical power for driving the machinery, ocean and river port facilities, three transcontinental railways rendering first rate service to all points, the country's best paved highways, a plentiful, splendid supply of clear water from the Cowlitz River at the confluence of the mighty Columbia River, were but few of the factors to be reckoned with.

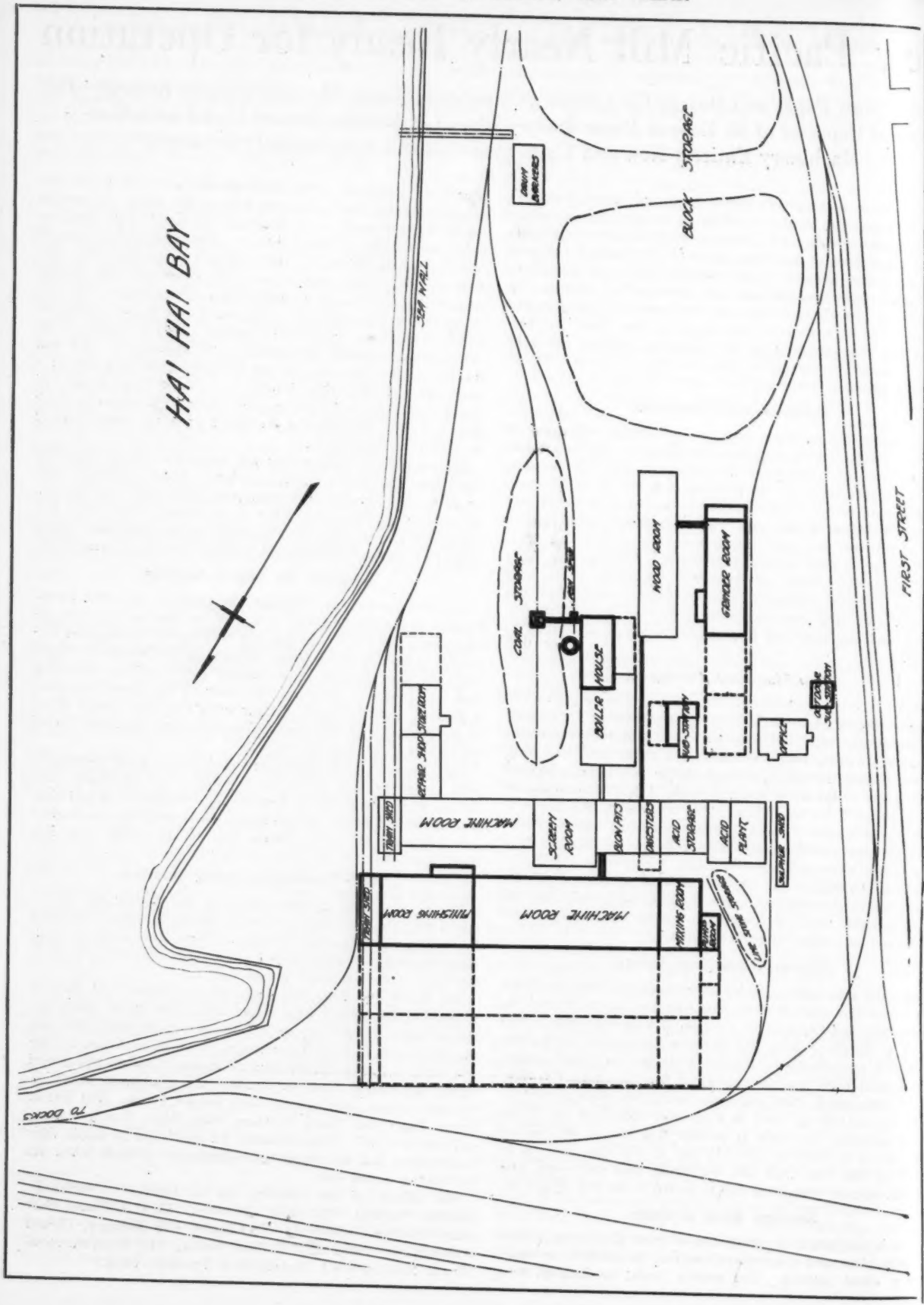
The offices are conveniently arranged and of good appearance, with a eight by eight foot vault accessible from all offices. The buildings are constructed of concrete for foundation, tile and glass with reinforced lintels and pilasters. These buildings are modern and substantial in every respect and contain 40,000 cubic feet floor space.

### Three Transformers Being Installed

Electric power for driving machinery and lighting will be obtained over a modern high-priced line already operating, furnished by the Long-Bell Lumber Company. Three large capacity transformers are now being installed and are of sufficient capacity to take care of the company's second unit.

The North, the East, the South and the Central and Western sections of the country have forged ahead, the Pacific West, too, but no section from today on will advance more rapidly than will the Northwest, for keen business men, from all parts, are for the first time reasoning out the logic of Horace Greeley's oft quoted saying and coming West, the Northwest, if you please, Washington and Oregon, and arriving here become young. The Pacific Straw Paper and Board Company came West, they are young and full of "pep". They followed the multitides to supply their requirements and are preparing to supply the greatest influx yet by building a new unit.

The officers of the company are as follows: Charles F. Schaub, President, (Industrial Chemistry); Geo. A. Sweet, Secretary-Treasurer, (Auditor); R. Clayton, Mill Manager, (Board Manufacturer); and "Bill" William Battles, Mill Superintendent, (Board Manufacturer), recently from Franklin, Ohio.




GROUND PLAN OF NEW PLANT OF THE PORT ALFRED PULP & PAPER CORP., PORT ALFRED, QUE.

# Port Alfred Pulp & Paper Co. Builds News Mill

## Construction Work Started August 4 and the New Mill, It Is Expected, Will Go Into Production in the Early Spring of Next Year—Machine Room Will Contain Two 234 Inch Fourdriniers Designed To Run 1000 Feet per Minute—G. M. McKee Heads Company

Off the south shore of the historic Saguenay River some fifty miles from its juncture with the mighty St. Lawrence, a bay indents the short-line, its course marked by the same abrupt rise of rock and wooded heights as hem in the parent stream from its beginning out of Lac St. Jean,—as the pioneers of New France gave it name, to its outlet amid the same rugged landscape, never out of sight in the Saguenay and Lake St. John country.

This bay makes its way in a south westerly direction, and at its extremity, a level area of considerable extent lies between shoreline and hillside, and provides for the towns of Port Alfred and Bagotville, P. Q., their most excellent location. Baie des Ha! Ha! is the name given to the bay itself by the early habitant, and Ha! Ha! Bay it is to those speaking the English language only.

Amid such surroundings, and at a stone's-throw from the shoreline, where deep sea navigation is continuous, throughout the open months, the new plant of the Port Alfred Pulp and Paper Corporation is now under construction, its buildings surrounding a present sulphite mill formerly known and operated as the Ha! Ha! Bay Sulphite Company, Ltd.

### Two 234 Inch Fourdriniers

The new plant will include a paper mill for 2—234 inch news machines, grinder room and new steam plant. The present wood room will be improved and increased capacity added to deliver prepared wood direct to grinder storage, and new fresh water pumping station and electric power substation and distribution will be added.

The present sulphite mill is of the most improved type throughout, and can produce continuously 180 tons of sulphite pulp per twenty-four hours. Sulphite production is therefore sufficient for an eventual installation of six news machines, and layout is made for three units of two machines each with accessories, the first unit being now under way.

### The Grinder Room

The grinder room will include twelve magazine grinders, each pair to be driven by a 2600 H. P. synchronous motor. Pulp will be passed through sliver screens and then pumped direct to the screening system in the mixing room of the paper mill.

The paper mill will consist of mixing room with new fresh water pumping station adjoining—machine room, finishing room and train shed. The machines will be 234 inches and designed for a speed of 1000 feet per minute, or well over a production of 100 tons per day.

### To Begin Operations in Spring

Active work was commenced on August 4, and all buildings are under a guarantee of being roofed in and under heat by December 15, thus allowing for equipment installation through the winter months, with mill going into production in the early spring.

The site being low lying and subject to saturation through high-tide periods, has been piled throughout in order to remove any question of resistance to heavy paper mill and grinder leads. Concrete piles were specified on account of permanency and non-excavation, and exceedingly good time has been made in placing this piling and following up with the foundation which it supports.

Paper mill and grinder room will be concrete and steel throughout, with gypsum roofs. All temporary walls will be brick, as well as substation and steam plant, these latter two structures to conform to the present design of architecture, sulphite mill being of brick throughout.

The steam plant will include 3—800 H. P. boilers for coal burning, and 2—500 H. P. boilers for both refuse and coal, with underfeed stokers under all boilers. Coal and ash handling for this steam plant will be mechanical throughout, and of the most improved type of instillation.

### Timber Holdings on Peribonka

New timber holdings including some 22,000 miles of limit, have been recently acquired on the Peribonka River, thus assuring the Port Alfred Corporation of an unlimited wood supply for the many years to come.

Electric power supply will be delivered through transmission line from the new hydro-electric development of the Duke-Price interests at the Grand Discharge out of Lake St. John, new substation and distribution installation to include both sulphite and new paper mills.

Geo. M. McKee, a past president of the Canadian Paper and Pulp Association, and well known throughout the entire industry, is President of the Port Pulp and Paper Corporation. R. O. Sweezey and Arthur Cross are vice-presidents. A. Wagner is secretary-treasurer. The directors of the corporation are—J. H. Gundy, E. A. McNutt, R. O. Sweezey and Arthur Cross. The Foundation Company of Canada, Ltd., of Montreal, is the general contractor on the work, and H. S. Taylor, consulting engineer, is in charge of engineering and design.

GROUND PLAN OF NEW PLANT OF THE PORT ALFRED PULP & PAPER CORP., PORT ALFRED, QUE.

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## Allied Mills Make Important Improvements

The Allied Paper Mills have just completed very important power improvements for the Bardeen divisions in Otsego, Mich. The new power plant is now in operation, both Bardeen mills, 1 and 2, being driven from the new unit. This will result in the scrapping of the old power unit at mill No. 1 and the retention of the power division at mill No. 2 as a reserve source of supply.

The new plant is equipped with three Wickes water tube boilers, each rated at 150 horse power. It also has the most approved type of stokers and coal handling machinery. By the rebuilding of the dam at Otsego there has been a large increase in the water power capacity and making it possible to install new generators.

Another important improvement has been made in the rebuilding of the No. 3 machine at the King division at Kalamazoo. This machine has been lengthened out by the addition of ten dryers and rotary screens, which permit a decided speeding up in production. President Gilman reports that the machine was operated early this month at the average speed of 365 feet a minute, which is very fast for a book machine. Formerly rated at 20 tons a day, this machine will now produce 25 tons every 24 hours. The work of rebuilding was done by the Beloit Iron Works and has required a major portion of the past three months.

A much appreciated improvement at the King division is the new park facing on Lake street. It has an area of approximately two acres and though only worked on the past two months, already boasts an unusually fine lawn. It is the intention to plant this park area with shrubs taken from the Monarch division site. A large plat of ground immediately at the rear of the new park, has been leveled and will be made available for parking space.

# I. P. Expands by Purchases and Construction

## Eight Machines Will Be in Operation At Three Rivers Mill Next Year, Producing 700 Tons of News Print Daily—Other Canadian Mill Sites to Be Developed as Fast as Needed—Recent Acquisition of the Riordon-Gatineau Properties

One of the most important developments in the paper industry during the past year has been the expansion of the news print mill of the International Paper Company, at Three Rivers, Quebec. This mill is now making about 340 tons daily. Four new machines, each of 90 tons daily capacity have been ordered and the necessary buildings and other apparatus are being erected. Two of the new machines are expected to be in operation before the end of the current year, and the other two machines by the middle of 1926, at which time the output at Three Rivers will be 700 tons daily, a larger output than that of any other mill. It is believed that the Three Rivers mill is now as efficient as any mill on the continent, and that with the added capacity just mentioned, it should be still more efficient.

### Tremendous News Print Output

The Three Rivers mill, on which construction was started shortly after the war, was originally built as a four machine mill. When the eight machines are in operation, the Three Rivers mill will be able to produce enough news print every minute to cover more than two acres, or enough every day to make nearly four million twenty-four page newspapers of standard size, or, looking at it from another angle the mill's daily output would make a strip eight feet wide stretching from the Atlantic to the Pacific.

The Three Rivers mill of the International Paper Company stands at the confluence of the St. Lawrence and St. Maurice Rivers, eighty miles below Montreal. On August 25, 1919, the Duke of Devonshire, then Governor-General of Canada, with appropriate ceremonies, started the construction of the mill by turning over the first spadeful of earth. From that date work progressed until the last of the four paper machines began turning out news print in August, 1922.

### Complete Electrical Equipment

The contract for the electrical equipment of the mill was the largest contract of its kind up to that time ever awarded in Canada. In this connection it is interesting to note that one of the outstanding features of the Three Rivers mill of the company is that every application of power is electric, and that it is one of the few 100 per cent electric paper mills in the world.

Not only does the St. Maurice River bring down pulp wood from the company's forests and furnish the power that runs the mill, but it brings the large supply of fresh water that is necessary for the operation of the mill.

### Huge Pulp and Filter Plant

For purifying this water and so insuring the cleanness and bright color of the output of the mill, a pump and filter plant is installed at the river bank. The combined capacity of the pumps is 55,800 gallons per minute, or more than enough to supply the city of Pittsburgh.

The transportation facilities of the mill are excellent, as ocean going steamships can go up to the dock, thus allowing wood and coal to be shipped in and paper to be sent out seven months of the year by water.

Plans are being prepared for the speedy erection of another large news print mill to use the pulp wood resources of the

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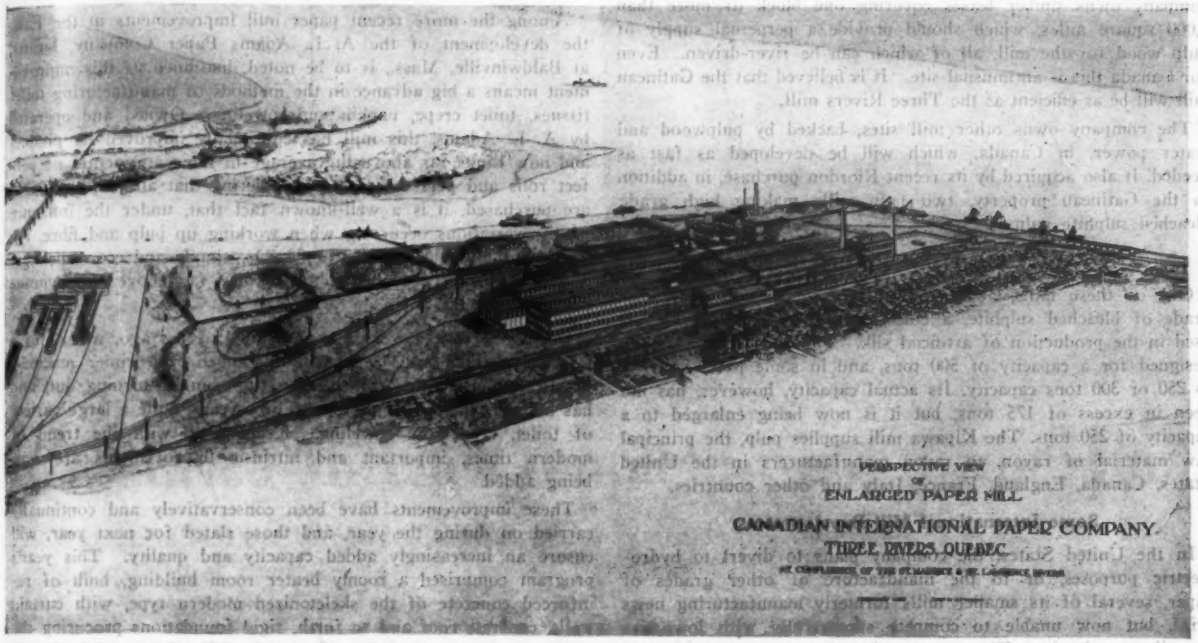
HAWKESBURY MILL, ONE OF THE RIORDON PROPERTIES RECENTLY PURCHASED BY INTERNATIONAL PAPER CO.

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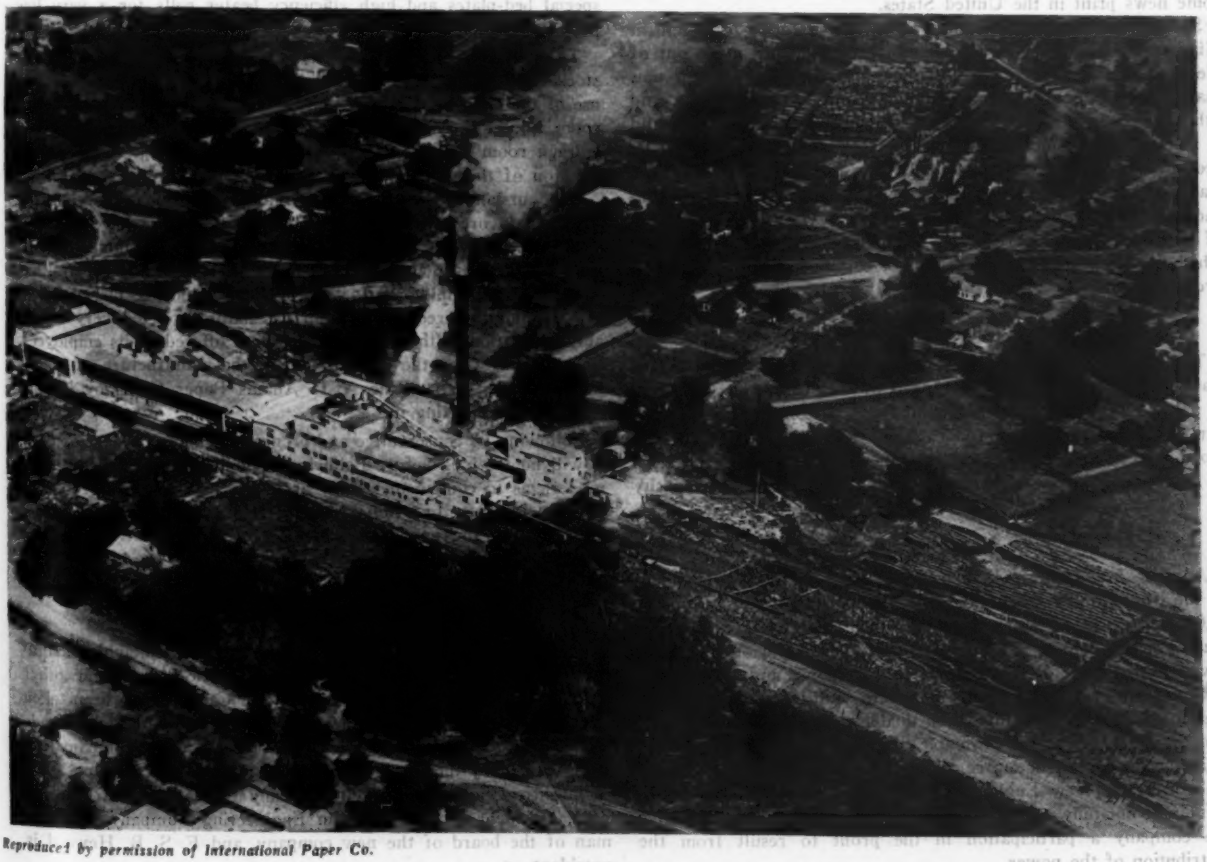
AS THREE RIVERS PLANT OF CANADIAN INTERNATIONAL PAPER CO. WILL LOOK WHEN COMPLETED



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PLANT OF BASTROP PULP & PAPER CO., RECENTLY PURCHASED BY INTERNATIONAL PAPER CO.

Gatineau River not far from Ottawa. Back of this project the company owns timber leases covering one block of more than 5,000 square miles, which should provide a perpetual supply of pulp wood for the mill, all of which can be river-driven. Even for Canada this is an unusual site. It is believed that the Gatineau mill will be as efficient as the Three Rivers mill.

The company owns other mill sites, backed by pulpwood and water power, in Canada, which will be developed as fast as needed. It also acquired by its recent Riordon purchase, in addition to the Gatineau property, two pulp mills making high grade bleached sulphite pulp.

### Kipawa Mill Makes Pulp for Rayon

One of these mills, at Kipawa, makes an exceptionally high grade of bleached sulphite, a considerable tonnage of which is used in the production of artificial silk. This mill was originally designed for a capacity of 500 tons, and in some parts built up to 250 or 300 tons capacity. Its actual capacity, however, has not been in excess of 175 tons, but it is now being enlarged to a capacity of 250 tons. The Kipawa mill supplies pulp, the principal raw material of rayon, to rayon manufacturers in the United States, Canada, England, France, Italy and other countries.

### Some International Mill Developments

In the United States, the company plans to divert to hydro-electric purposes, or to the manufacture of other grades of paper, several of its smaller mills formerly manufacturing news print, but now unable to compete successfully with low cost Canadian production. The company has, however, in the United States several very efficient news print mills, notably those at Livermore Falls, Maine, and at Palmer, New York. The company believes that it should continue, so far as possible, to manufacture some news print in the United States.

Several years ago the company converted its news print mill at Niagara Falls, N. Y., to the manufacture of paper made out of bleached sulphite and other similar raw material. This mill now manufactures about 120 tons daily of book, bond, envelope, and other similar grades. It operates efficiently on these grades, and is showing a satisfactory profit. The company, also, through its recent Riordon purchase, controls the Ticonderoga Pulp and Paper Company, which is an acknowledged leader in the manufacture of the higher grades of book paper. It will be the policy of the company to increase its output of those grades at mills which for geographical reasons cannot continue profitably on their present output.

### Bastrop Mill Recently Purchased

The modern mill of the Bastrop Pulp and Paper Company at Bastrop, La., was recently purchased by this company. The mill is a low-cost producer turning out about 50 tons of kraft paper per day, used principally for bag and wrapping purposes. The wood used at that mill is short leaf pine which is obtained nearby If conditions warrant, the company will soon increase the capacity of its Bastrop mill.

### Alliance With New England Power System

Another important and far-reaching step in the development of the International Paper Company was the recent subscription to $4,000,000 worth of stock of the New England Power System. This system forms a natural outlet for the electric output, when developed, of some of the company's water power properties. For instance, the company's Fall Mountain mill at Bellows Falls, Vermont, has for some time been unable to operate economically, and the most logical and profitable disposition of the property lies in its development as a source of hydroelectric energy. The alliance made with the New England Power System through this investment will not only assure an outlet for this power, but also give the company a participation in the profit to result from the distribution of the power.

## A. L. Adams Paper Co. Developments

Among the more recent paper mill improvements in the East, the development of the A. L. Adams Paper Company, located at Baldwinville, Mass., is to be noted, inasmuch as this improvement means a big advance in the methods of manufacturing toilet tissues, toilet crepe, napkin and toweling. Owned and operated by A. L. Adams, this mill has continually improved its product and now ranks far above the average in the manufacture of perfect rolls and perfect crepe. Considering that all pulp and fibre are purchased, it is a well-known fact that, under the influence of the variations occurring when working up pulp and fibre, the equipment must be sufficiently flexible, simple and economical, to obtain a product of a standard nature far above the average characteristics.

Developed from its original state of 15 years ago, when still a cylinder-machine mill, a specially arranged fourdrinier machine, practically automatic after being set to run, is turning out, and has been producing for the past 5 or 6 years, quite a large variety of toilet, crepe and toweling. Keeping up with the trend of modern times, important and intrinsic improvements are now being added.

These improvements have been conservatively and continually carried on during the year, and those slated for next year, will ensure an increasingly added capacity and quality. This year's program comprised a roomy beater room building, built of reinforced concrete of the skeletonized modern type, with curtain walls, concrete roof and so forth, rigid foundations procuring the stamina necessary to dampen out undue vibrations and perfecting the beating conditions necessary to mill a perfect stock. The beaters are of the Shlick Patent Type, of relatively fast circulation, capable of operating at high consistency and equipped with special bed-plates and high efficiency beater rolls for a very low power consumption.

The tubs, the rolls and the plates, are designed to draw out the stock without cutting and crushing and to circulate it without the use of the paddle. A large roomy basement, below the new beater room, houses the new chests. An especially designed extra strong storage room is located above the beaters, which, owing to the location of the mill, are readily charged with raw materials.

The outstanding feature of the manner in which this company has been favored with orders, is that its customers have found it expedient to always provide the mill with such a volume of business that a shut-down, excepting for dire changes and repairs, has been practically unknown for years. The confidence placed in the grades manufactured by this mill has naturally acted very favorably in relation to the steady employment offered to its employees, thus reacting upon the continuation of the manufacture of standard products, such as the A. L. Adams Paper Company is, and has been, specializing in.

Following its conservative and progressive mode of development, it will not be long before Baldwinville will be proud of the plant, modern as to equipment, steady as to employment, and second to none in its line. Leo Shlick, M. E., is the architect and engineer in charge of the improvements.

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## American Engineering Co. In Canada

The American Engineering Company, of Philadelphia, manufacturer of Taylor Stokers, Lo-Hed electric hoists and other machinery, announces that its interests in Canada have been taken over by The Affiliated Engineering Companies, Ltd., with headquarters in the Southam Building, Montreal. This company has been formed by the merger of the Taylor Stoker Company, Ltd., of Montreal, and the Cleaton Company (Canada), Ltd. M. Alpern, president of the American Engineering Company, is chairman of the board of the new company, and F. S. B. Heward is president.

GROUND WOOD STORAGE TANK

ONE OF THE NEW MACHINES

# St. Maurice Mill a Complete News Print Unit

## Company Installs Two 166-inch Pusey & Jones Fourdriniers and Three New Grinders Bringing Capacity of Plant Up to 275 Tons of News Print, 210 Tons of Ground Wood and 75 Tons of Sulphite Daily—Work Done by Company's Own Staff of Engineers.

The installation of two new paper machines during the past year by the St. Maurice Paper Company at Cap de la Madelaine, P. Q., Canada, takes up the former surplus production of sulphite and ground wood pulp, making the mill a complete newsprint unit.

The first rolls of paper were taken from the new machines late in December, 1924, and since January 1 of this year, they have been producing at an average of 150 tons daily.

### Pusey & Jones Fourdriniers Installed

The new machines are Pusey & Jones Fourdriniers, 166 inches at the couch, with a rated speed of 800 feet per minute. All auxiliary apparatus of the original two machines was practically duplicated, with the exception of slight changes in equipment, which the advance in the art of paper-making made advisable. This equipment included constant speed lines, jordans, screens, broke heaters, pumps, motors, etc. In addition, a Briner economizer system for reclaiming heat from the paper machines was installed, making possible a considerable saving in fuel.

### Ground Wood Mill Expanded

The ground wood mill was supplemented by a line of three new grinders, driven by a 1500 h.p. motor, while additions to the

FRONT VIEW ST. MAURICE PAPER CO., CAP DE LA MADELAINE

stock line include ten new ground wood deckers, and one new sulphite decker.

A ground wood storage tank with a capacity of 60 tons, has also been erected to provide against break-downs, and other such unforeseen emergencies.

In order to absorb the increased steam consumption, the boiler

REAR VIEW NEW BOILER INSTALLATION

house was extended to include 556 h.p. Kidwell boilers equipped with Taylor stokers and three Foster superheaters, and five Foster economizers.

### Work Done by Company's Own Engineers

One of the most interesting features of this expansion is the

TAYLOR STOKER EQUIPMENT

fact that the design and construction of the new machine room together with the installation of the new boiler, was accomplished by the company's own staff of engineers.

Another move which is contemplated to increase the efficiency of the mill is the proposed installation of a 96 cylinder machine of 35 tons daily capacity. This machine will be used to make wrappers for the company's news print product, and thereby to utilize on the ground a large portion of the company's by-product.

The St. Maurice Paper Company, Limited, now is one of the most modern and complete news print units in Canada, with a total production of two hundred and seventy-five tons daily, from four 166 inch machines, which are fed by a 75 ton sulphite, and a 210 ton ground wood mill.

The company's vast limits, located along the St. Maurice and the Lac Quarean Valleys, comprising 2,000,000 acres, or roughly 10,000,000 cords of pulp wood, guarantees approximately sixty years of raw material.

### Complete News Print Unit

The process is now a continuous one from the wood-pile to the finished product, the stock from the ground wood and sulphite mills being run slush to the mixing tanks, and then on to the paper machines.

In addition to the above, the company operates a 65 ton Kraft Mill.

The St. Maurice Paper Company, Limited, has enjoyed from the beginning an enviable reputation in the news print field, its product being widely recognized as standard for the industry.

The company's location at the juncture of the St. Lawrence and St. Maurice rivers, is most favorable, as it affords excellent facilities for the reception of wood from its limits, and for shipments of news print paper via water.

## Kimberly-Clark Rebuild Hydro-Electric Station

About June 1 work was started rebuilding the old hydro-electric station of the Kimberly-Clark Company paper mill in Kimberly, Wis., to replace the equipment with more efficient water turbines and generators. To install this equipment, it was neceessary to rebuild the entire sub-structure and go three feet deeper into the solid rock for the discharge of the water, also to raise the roof three feet.

The new equipment will consist of three 960 h. p. water turbines to which will be direct connected, vertically, three 900 H. V. A. generators with direct connected exciters.

The turbines and generators will run at 93.7 r.p.m. and generate 25 cycles, three-place energy at 480 volts. Each unit has a governor for special regulation.

The runner of the water turbine will be of the axial flow or propeller type with adjustable vanes. This vane adjustment can be made outside the turbine casing, and it is not necessary to go into the turbine pit to do this. It is provided to suit the various flow and head conditions so that a maximum of power can be had at all times.

This type of runner is very modern and is the first to be installed in this part of the country.

Another interesting feature is that the station will be fully automatic, requiring no station operators. The complete unit will be started, synchronized and put on the system, or shutdown, by push button, float switch, or any such apparatus.

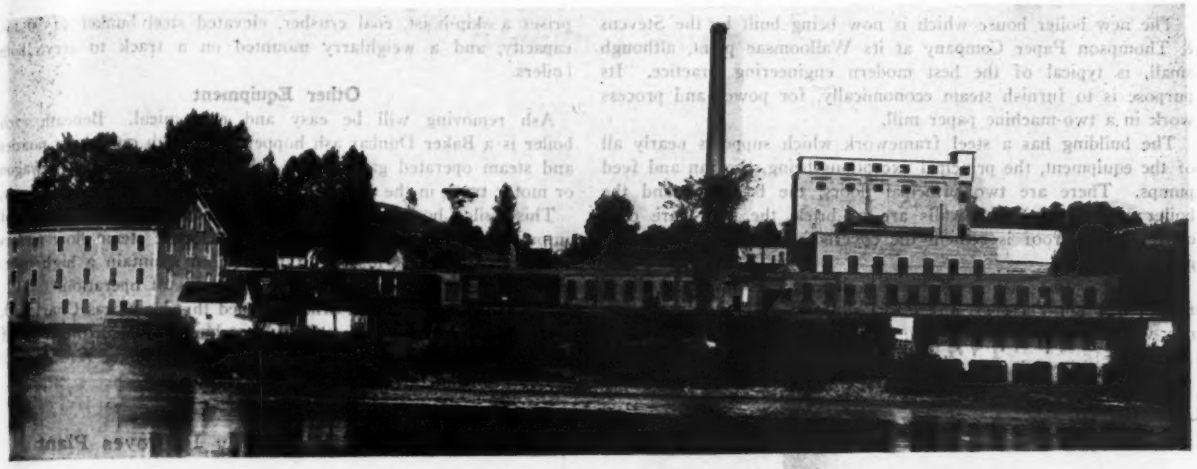
Protective apparatus is provided to protect the generators against anything that might occur, such as overheated bearings, overheated machines, loss of oil and any other condition which might cause injury. When something goes wrong, this protective equipment immediately acts and stops the complete unit.

The turbine casings are now installed, all the concrete work is done. A new electric crane has been installed and the balance of the turbines, generators and switchboard will commence to arrive within a few days. It is expected that one unit will be ready for operation the latter part of November, and the complete station by about Jan. 1.

The water turbines, governors, generators and exciters are being supplied by the Allis-Chalmers Company and the switching equipment by the General Electric Company. The construction work is being done by the C. R. Meyer & Sons Company, Oshkosh, Wis.

When complete, this station will be one of the most modern low-head installations in the country as it embodies the latest improvements in hydro-electric engineering.

# Canada Paper Co. Builds New Soda Pulp Mill



WINDSOR MILLS WITH NEW PULP MILL

The Canada Paper Company, Limited, of Windsor Mills, Que., has for some months been busy on the erection of a new pulp mill for the production of pulp under a modified soda system.

This mill is on the site of the old pulp mill which has been operated by the Paper Company since 1864. This pulp mill was the first erected in Canada and was preceded by only one on the continent, which had been built shortly before in Pennsylvania.

The new pulp mill is from the design of Geo. F. Hardy, of New York, and P. Delin is resident consulting engineer. It will be a distinct step forward in the production of pulp, as it will be operated under what is known as the Keebra Process, a new method of making pulp that is expected to produce a fibre superior to anything now being made. The digesters are of welded steel and are built for a working pressure of 160 lbs., which is considerably higher than anything now in practice. Steam will be supplied from B. & W. boilers built by Goldie & McCullough, of Galt. The boilers will operate under 200 lb. pressure and are equipped with type E stokers and Lungstrom air preheater, also an elevation in this country. The pulp will be washed in Oliver filters and the process of manufacture has been simplified to a degree.

The Company expects further to improve its plant by taking out a small paper machine and replacing it with a high speed and up-to-date one. The company has always followed the practice of increasing its output gradually, so that the increase keeps pace with the growth of its business. By this means it is comparatively easy to keep the mill well supplied with orders; the company has never had any difficulty in keeping its works busy.

The Canada Paper Company has also acquired another water power on the St. Francis River capable of developing some 12000 h.p. Plans for hydro-electric development of this power have been prepared by Henry Holgate, of Montreal, and the work will be proceeded with just as soon as the improvements at the mill are completed.

C. R. Hosmer is president of the company, F. J. Campbell vice president and general manager, H. B. Donovan manager of sales, and H. M. Thorne secretary treasurer.

## Fraser Mill Equipment Ahead of Schedule

A dispatch from Fredericton, N. B., says that within the course of a week, it is expected that the new sulphite paper mill of the Fraser Paper, Limited, at Madawaska, Maine, with a total capacity of 20,000 tons per year, will be in operation. The new mill will receive delivery of bleached sulphite, duty free, from the Edmundston mill of the same organization in slush form through a pipe line across the St. John River. In the original plans for the Maine mill it had not been expected that the plant would be in operation before the beginning of 1926, so that under present conditions it is expected that the company's year, which ends on December 31, will benefit by about two months' operations of the new mill.

There has been noted a quite considerable improvement in the sulphite market in the past few months. Net earnings of the Fraser Companies in 1924, after all expenses but before depreciation and depletion, amounted to almost $1,000,000, while a recent estimate of the earnings for 1925, on the same basis, is $1,100,000, this without inclusion of any operations by the new sulphite mill in Maine.

As to future extension of operations, Archie Fraser, the head of the Fraser organizations, was not prepared to make any statement beyond saying that the plans were such that further enlargement was provided for. Mr. Fraser also confirmed reports that Fraser Companies, Limited, were adding to their string of sawmills in New Brunswick and Quebec. A new plant is being erected at East Lake, situated 95 miles up the railway from Edmundston, and then ten miles back from the railway into the heart of the Quebec forest. It will be ready for occupation next spring and will have an annual capacity of about 10,000,000 feet.

## Bates Valve & Bag Co. Builds Pennsylvania Plant

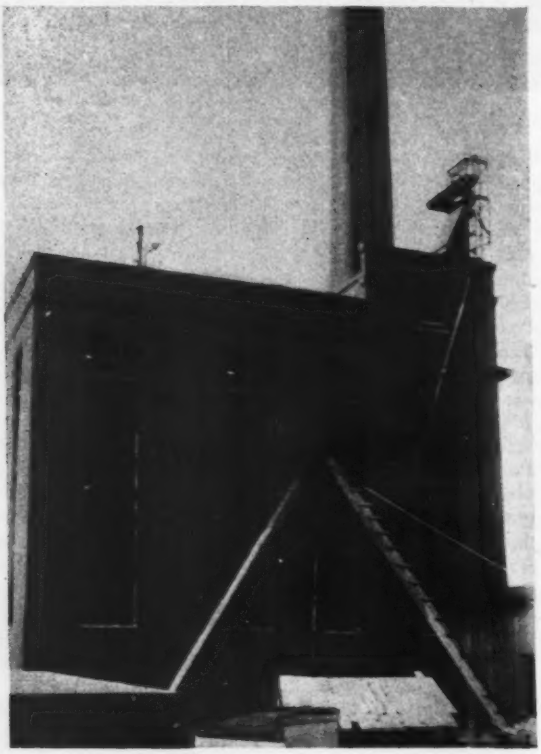
Having a vast outlet for its production in the State of Pennsylvania the Bates Valve Bag Company of Chicago is now planning the construction of a plant in this territory to take care of its local interests here. The Bates Company controls certain patents used for the filling of heavy products into sack containers and enjoys a large cement manufacturing patronage in this vicinity. It has acquired a site at Nazareth, Pa., where will be constructed a mammoth plant devoted to the specialized business which it enjoys. The company recently has been consuming large quantities of heavy and specially manufactured strong Kraft papers used for the manufacture of bags for the shipment of heavy products such as cement. This firm enjoys an extensive business with cement manufacturers having control of filling devices particularly adapted for this class of work. Last month Samuel Bates, head of the firm, journeyed from the Chicago headquarters to Nazareth to supervise the purchase and plan the construction of its local branch. The new plant will be accessible to the Atlas Portland Cement headquarters near Easton, Pa.

# Stevens & Thompson Build New Boiler House

The new boiler house which is now being built by the Stevens & Thompson Paper Company at its Walloomsac plant, although small, is typical of the best modern engineering practice. Its purpose is to furnish steam economically, for power and process work in a two-machine paper mill.

The building has a steel framework which supports nearly all of the equipment, the principal exceptions being, the fan and feed pumps. There are two principal floors, the basement and the boiler room floor. The walls are of brick, the floors are concrete, and the roof is cement tile covered with felt, asphalt, and gravel.

There are two 500 horse power Babcock & Wilcox boilers, fitted with superheaters and soot blowers. These are set in row with an aisle between them. The center of the boiler drums



NEW BOILER HOUSE

is twenty-five feet above the boiler room floor. Each boiler is served by a 5 retort Riley stoker, equipped with a flat power ash dump. The Webster type of furnace is used.

### Green Economizer Draft Fan

The Green Fuel Economizer Co. is furnishing the forced draft fan. This fan may be driven by an electric motor or a Terry steam turbine. The chimney is of radial brick built by the M. H. Kellog Co. The total height including the foundation, is 190 feet.

The feed water system contains an open Cochrane feed water heater and storage tank; two Allis Chalmers centrifugal boiler feed pumps, one direct connected to an electric motor, the other to a Terry steam turbine; and two Copes feed water regulators furnished by the Northern Equipment Co. Provision has been made in the building, to add a water softener and filter at a later date if that becomes advisable.

The coal handling system by the R. H. Beaumont Co., comprises a skip-hoist, coal crusher, elevated steel bunker of 90 ton capacity, and a weighlarry mounted on a track to serve both boilers.

### Other Equipment

Ash removing will be easy and economical. Beneath each boiler is a Baker Dunbar ash hopper fitted with quenching nozzles and steam operated gates. The ashes are dropped into a wagon or motor truck in the ramp of the basement and then hauled away.

This boiler house is to be fitted with the Carrick System of automatic combustion control, General Electric steam flow meters and other apparatus making it possible to maintain a high operating efficiency and to keep accurate records of operation.

The consulting engineer who designed this plant was Charles O. Lenz, of New York City. The Kingsbury Constructoin Co., of Hudson Falls, New York, are erecting the building. W. W. Metcalf is the resident engineer.

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## Nashwaak Pulp Co. Greatly Improves Plant

The Nashwaak Pulp and Paper Company decided in 1922 to increase the size of its plant at St. John, N. B., and to make the necessary installations to improve the quality of its product. At that time, the output of the mill was about fifty tons per day, and during the last three years the product has been increased to 80 tons per day. The quality of the pulp which the company has been making for the past year and a half is greatly improved and compares favorably with the highest grades of bleached sulphite pulp which are being offered in the American market.

To make it possible to increase the quantity and improve the quality of our product, it was necessary to make large expenditures, and the following installations were made:

A complete new boiler house equipped with Manning Vertical Boilers and Jones' Underfeed Stokers. This power house is one of the most modern and efficient boiler houses in Canada.

A complete Jenssen Acid System has been installed. This is a very substantial advantage to the company as its plant is located in the middle of a lime rock section where the supply of rough lime rock is abundant.

A new Paulson barking drum has been installed in the wood room, of most recent design, which installation has greatly increased the capacity of the wood room and improved the efficiency of the wood preparation.

A complete installation of Rifflers has been made, which was an addition to the plant, as it had never been equipped with Rifflers before.

A new screen room was built, and the screening capacity of the plant has been doubled.

A second drying machine has been put in operation, as the original drying machine could not handle the increased product of the plant.

In addition to the plant changes mentioned, smaller increases in different departments such as bleach-mixing departments, knotter rooms, etc., have been made to such an extent as was necessary to provide for the increased production.

The company's shipping facilities proved also to be inadequate and it has been necessary to greatly increase the capacity of its yard by installing additional sidings with a complete system of conveyors for the unloading and storing of pulp wood which is received from rail points and supplements the production of timber from our own lands situated on the Nashwaak River.

The organization of the company has also been completely changed during the past three years. F. W. Brown is mill manager and is well known in the trade because of his long connection with Hollingsworth and Whitney, Brown Company, and Fraser Companies, Limited.

# *A New Method of Producing Bleach Liquors*

WHEN our technical staff first attacked the problem of absorbing Liquid Chlorine to produce bleach liquors, there was available only the old-fashioned tower system. We first suggested the desirability of using the refrigerative effect caused by the vaporization of the Liquid Chlorine by means of our evaporating coil now in successful use in more than a score of paper mills and several large textile mills.

The development announced herewith has been brought about by our realization of the need for a method allowing more rapid absorption and more flexible utilization of existing bleach house equipment. The accompanying cut shows the construction of the chlorine absorber and its location in the chlorinating system. This new equipment possesses the following advantages:

*Simplicity* in construction and operation are secured by the fact that the vaporization of the Liquid Chlorine and its subsequent absorption by the milk of lime solution is entirely effected within the chlorine absorber. In connection with the unit batch system with the ton container as the base for the desired batch, it furnishes foolproof operation with any grade of operating labor.

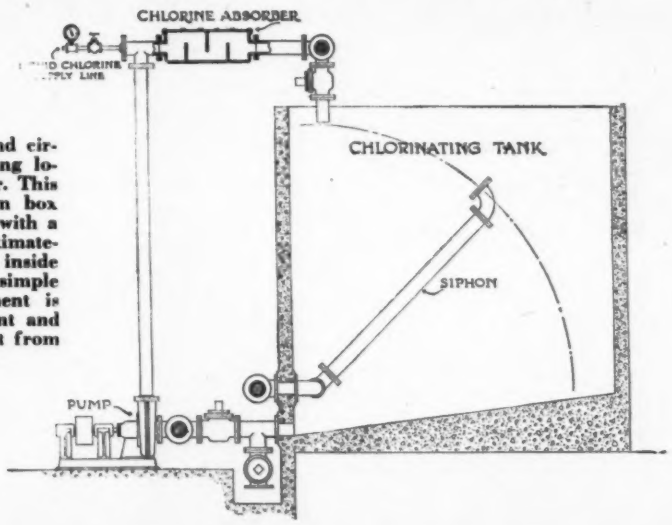
*Refrigerative Effect* of vaporization is utilized even to better advantage than with the coil, since it is localized just where the heat of reaction of the combination of the chlorine and the lime is momentarily concentrated.

*Rapidity of Absorption* is such that chlorination can proceed at the rate of 2,000 pounds of chlorine per hour or better, depending on the capacity of the circulating pump. The advantage of this speed for large operations is evident.

*Flexibility* is a prime feature of this method, in that a single "chlorine absorber" can be used to successively chlorinate any number of tanks.

*Accurate Control* of the liquor, when the unit batch system is not used, is assured by the fact that liquor is available for testing at the exact point of chlorination.

Developments such as this, in the manufacture, transportation and use of this highly technical product, accrue primarily to the benefit of our customers. Because consumers appreciate this fact, the Mathieson Company is today the largest shipper of Liquid Chlorine in the United States.




**Chlorinating tank and circulating system, showing location of new absorber. This consists of a cast iron box about 2 ft. in length, with a cross-section of approximately 10" x 10", equipped inside with a series of simple baffles. This equipment is made at our own plant and may be obtained direct from us.**

## *The* MATHIESON ALKALI WORKS, *Inc.*

250 PARK AVE., NEW YORK CITY

PHILADELPHIA CHICAGO PROVIDENCE CHARLOTTE

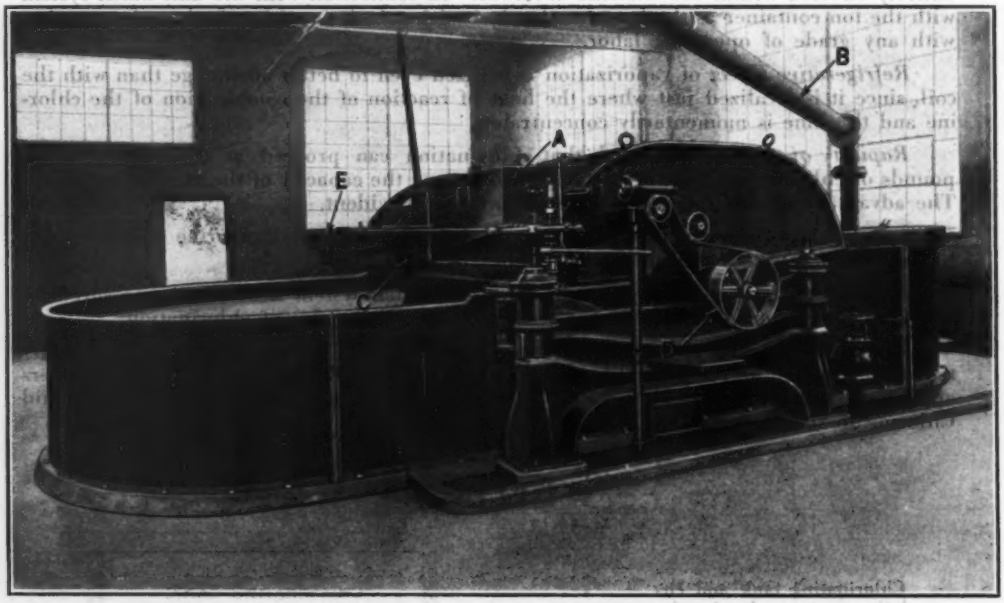
# Unkle Extractor at A. P. W. Plant

The picture presented herewith is from a photograph of a beater in the mill of the A. P. W. Company, at Albany, N. Y., equipped with an Unkle Improved Extractor.

This beater is the only one furnishing stock for Machine No. 9 of the A. P. W. Company, which has a capacity of from 10,000 to 12,000 pounds every twenty-four hours.

It is the plan of this company to use the same beater to furnish its machine No. 10, which machine it is about to install at the present time, and with this added tonnage of 10,000 to 15,000 pounds this beating engine will then be functioning only 28 per cent of its capacity. In other words the beater in question could furnish enough stuff, used in connection with the Griley-Unkle Engineering Company's continuous beating system, to take care of three or four more paper machines of the same tonnage, providing the same grades of paper were being made on the other machines.

The Unkle Improved Extractor is internationally accepted as a most efficient means of re-pulping a great many kinds of raw materials.




BEATER EQUIPPED WITH UNKLE IMPROVED EXTRACTOR AT A. P. W. CO. MILL

The equipment itself consists of a beater hood, which is perforated on the front side. The perforations are covered by a water-tight box which slants to whichever side it is desired to have the stock flow. This is marked "A" in the photograph. These perforations are kept clean by a series of scrapers that travel over them constantly while the beater is in operation. The power to drive these blades is taken from the end of the spindle. See the point markd "D" in the illustration.

The production of a beater equipped with an Extractor is controlled by its outlets (see figures "C" and "E"). "E" is the trough to the chest and in case the chest was full, "C" allows the stock to return to the beater and to re-circulate.

"B" in the photograph represents an overflow from the Jordan back to the beater.

The Unkle Improved Extractor will perform successfully on any type of beater made, unless the roll used is made of stone, and in this instance, the principle will not work owing to the fact that no stock is thrown over the roll.

The manufacturers of this machine claim that the system increases production from 300 per cent to 500 per cent over the normal capacity of the beater before it is equipped with the Extractor.

## A. C. Coty & Son Perfect New Feeder

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., October 29, 1925.—A. C. Coty & Son, well-known paper bag machinery inventors, of this city, have recently perfected an automatic feeder for use in connection with bottomers or with printing presses.

The machine possesses many interesting and novel features not known heretofore in machines of this type. The machines have been thoroughly tested and can be seen in actual production operation here.

The machine will handle any grade or weight of paper capable of being fed by hand at increased production and less cost. The action is entirely mechanical and without the use of vacuum blowers, friction rolls, or the many complicated mechanisms heretofore introduced or in use in other feeders. It can also be quickly adapted to various widths of tubes. It is unnecessary to stop the machine in adapting it for different lengths. It is a distinct departure from anything used in the manufacture of bags and they are now being manufactured on a production basis.

## Made Officers of Chapman Paper Co.

[FROM OUR REGULAR CORRESPONDENT]

ST. LOUIS, Mo., October 26, 1925.—T. W. Freeman has been made assistant treasurer and G. C. Hargrave, assistant secretary of the Chapman Paper Company. Mr. Freeman was formerly connected with the Mercantile Trust Company of St. Louis and will have charge of collections and credits for the Chapman Company. Mr. Hargrave has been with Chapman for some time as auditor and was advanced to his present position.

# *Make your Dryers do their duty*

BIRD MACHINERY

WHAT would happen if you covered your dryers with asbestos? Either they wouldn't dry the paper at all or you'd have to use up an enormous amount of steam to make them.

Particles of fuzz and burnt paper have the same effect if you allow them to collect on the shell. For efficient drying, you ***must*** keep the surface clean.

The Vickery Doctor provides the practical solution of this problem. It requires no tedious adjustments or fitting, it will not score, and it keeps the surface of the dryer in perfect condition for maximum heat transfer.

From the standpoint of steam saving alone you can not afford to operate dryers without Vickery Doctors.

Let us supply you with full information on Vickery Doctor equipment for your dryers.

**BIRD MACHINE COMPANY**
SOUTH WALPOLE ~ MASSACHUSETTS

*Western Representative*
*T. H. Savery, Jr.,*
*1524 Republic Bldg.,*
*Chicago, Ill.*

*Canadian Builders of Bird Machinery*
*Canadian Ingersoll-Rand Co., Limited*
*260 St. James Street*
*Montreal, Canada*

*You can put the Vickery Doctor on Your present supports.*

8459

# VICKERY DOCTOR

# Scott Paper Co. Installs New Paper Machine

When the construction of No. 7 Machine is completed this fall the Scott Paper Company, of Chester, Pa., will have attained a record for its plant in having the largest machine of its kind in the world. This newest of equipment in the Scott mills will be devoted to the manufacture of papers used in the production of Waldorf Toilets, the firm's own brand with a national distribution. This machine has a 175 inch trim with 16 dryers measuring 60 inches and matches with another of similar type recently installed. In construction there are two presses—the first, a suction press with a top roll of 25 inches in diameter and rubber covered and a 24 inch channel. The second press has two rubber covered rolls each 24 inches in diameter. There are no calenders on the machine said to be the widest run and of high speed. It is capable of turning out 600 sheets per minute.

### Machine Equipment

It is equipped with the latest Pope reel of 42 inches diameter and will trim on the rewinder. There are two 83 inch wide rolls accompanying the winding apparatus. The mechanical units are entirely electrical driven, motors adapted to its operation having been added along with the new devices.

In order to adapt the building to the accommodation of this record machinery, portions of the structure in which the installations are made were reconstructed to meet its requirements.

Another innovation in the Scott plant is that of the installation of the Ross Economizer System for the reuse of the waste vapor from the dryer in the heating of the mill.

### Additional Building Facilities

Additional building facilities have been acquired for the power plant in which there have been installed a 600 h.p. boiler and a 1500 Kw. turbine to furnish additional power for operation of the new machinery.

In its development of the mills and the intent to provide the most thoroughly equipped plant of its kind in the world the Scott Company has made numerous extensions both in the building arrengements and in the shipping and mechanical units. Among the recent devices that have been added were shredders to serve in the preparation of the sulphite and ground wood materials in preliminary stages before the pulp is ready for the beaters. Three other large machines, one with a 148 inch trim and two with 175 inch trim each, are also given over to the production of Scott tissues as well as three smaller machines of 84 inch trim each. With these units the Scott Company is now turning out 125,000 pounds per day and when the new machine is completed this record will be raised to 240,000 pounds every 24 hours. It is expected that the new equipment will be ready for operation by the first of the new year.

For future expansion of its manufacturing facilities the Scott Paper Company has purchased during the past year two additional acres of ground just across the way from the present site of the plant with its area of 250 feet by 380 feet. There also has been constructed on the River Frontage a warehouse 70 by 250 feet, located on the new bulkhead of the large pier extending into the Delaware River.

This newest of machines was constructed in the shops of the Moore & White Company, 17th street and Lehigh avenue, Philadelphia, manufacturers of paper making equipment.

### Will Be Largest Toilet Concern

When the new units are in operation the Scott Paper Company, it is said, will have attained the reputation of being the largest individual manufacturers of toilets and toweling in the country. It is essentially a Philadelphia institution having been founded in ths city back in 1879 by E. J. Scott and his brothers, Seymour and E. Clarence Scott. The business was started in a store at 27 North 6th street where a general jobbing establishment was conducted. Later the business was disposed of to Ellwood H. Hults and the Scott brothers began their career in the converting industry. In 1910 the business removed to Chester where the present site of the mills was acquired. With the retirement of E. Irvin Scott his son and present president of the Company, Arthur H. Scott, became head of the firm. Other officers are Vice Presidents Owen Moon, Jr. and J. G. Lamb; Treasurer, E. S. Wagner; Secretary, T. B. McCabe and Assistant Secretary, E. J. Fitzgerald.

## McDowell Paper Mills Make Improvements

Although the McDowell Paper Mills, in the Manayunk paper making district, have been recently extensively modernized, there still continues to be perfected the mechanical units and housing facilities of the plant. There just has been issued a permit to the mills for the construction of an all steel storage shed for the wintering of wood pulp from the European Pulp Markets, the firm having just closed a deal for the importation of large quantities of the finer grades of pulp from several foreign sources. The steel shed will be constructed by the Truscon Steel Company, of Youngstown, Ohio, and will be of sufficient size to store large importations of the pulp during the winter season for the manufacture of fine warppings, glassines and other specialties manufactured by the Mills.

Another improvement to the Mills will be the installation of an embossing machine for the embossing of numerous designs on glassines of high grade stocks. There also are pending many other improvements to be effected in the coming year.

President Charles McDowell, of the company, who has been cruising along the New England Coast as far as the northern extremity of Maine with Col. Charles Eisonlohr in his Yacht Miramar, is again back at headquarters, Maine and Levering streets, in Manayunk.

The McDowell Mills now are running full time on the holiday requirements for the confectionery, grocery, drug and other industries using high grade wrappings and glassines and has enough advance orders for regular stocking to keep production at its present speed for many months to come

The new embossing machine will enable the firm to produce papers with embossed labels or designs in imprints in all styles of special brands or marks to meet the individual needs of the trade or the manufacturers and consumers.

## Two Decades of Revolvators

In "Two Decades of Revolvators," the well-earned popularity of the Revolvator is shown by many illustrations. This bulletin, issued by the Revolvator Company, of 336-352 Garfield Avenue, Jersey City, N. J., is a pictorial record of a few of the many thousands of Revolvator installations made during the past two decades. The booklet gives an idea of the general utility and the remarkable length of time the Revolvator serves its users.

The general adoption of the Revolvator in the leading paper mills is ably described in this interesting pamphlet and the photographs reproduced inciude the following: "Motor driven Revolvator loading heavy rolls of paper in freight cars," "Piling dry pulp," "Storing heavy rolls of paper," "Piling 2,000 pound rolls of paper five tiers high," "Bales of paper stock piled and Revolvator being lowered for use in other work," and many others.

As is well-known the Revolvator is a portable elevator for the rapid piling or tiering of heavy merchandise or raw material and is made in nine standard models—hand operated, motor driven and combination hand or motor operated, all with either revolvable, non-revolvable or open end bases.

*So many BRINER ECONOMIZER installations going in have not time to write an advertisement this month.*

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# Montreal Convention Attracts Many Paper Men

## Canadian Pulp and Paper Exports Contributed Largely to Maintenance of Balance of Trade, Stated C. Howard Smith, at Annual Dinner—United States Will Soon Be Entirely Dependent on Canada for News Print, in Opinion of R. I. Findlay—Sir Henry Egan Dead

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., October 26, 1925.—Canada's enormous exports of pulp and paper to the United States, more than any other reason, has been responsible for bringing the Canadian dollar back to par, and maintaining it at its proper value, declared speakers at the 8th annual convention dinner of the Canadian Paper Trade Association in Montreal during the week. C. Howard Smith, president of the Howard Smith Paper Mills, echoed this statement, and said that the huge pulp and paper exports had contributed largely to the maintenance of the balance of trade. Mr. Smith complimented the gathering on the co-operative spirit manifested between printer, manufacturer and jobber, and submitted that such co-operation was needed for the building of the industry.

R. I. Findlay, president of the Canadian Paper Trade Association, said that nearly two-thirds of the news print used in the United States comes from Canada, either in the form of pulp or in the finished paper. Such exports were growing by leaps and bounds and the time was not very far distant when the United States will be entirely dependent upon Canada for its news print. There has been more progress in the paper industry in Canada during the last twelve years than in the previous 100 years, said Mr. Findlay. While the first paper mill was built in Canada in 1803, the advancement made in the subsequent century could not compare with the amazing progress in the last dozen years. From an insignificant position, the Dominion has risen to the premier paper producing country in the world.

Other speakers at the dinner were Alderman S. J. B. Rolland, of the Rolland Paper Mills, Ltd.; Bruce Brown, chairman of the Quebec branch of the association, and William C. Ridgway, secretary of the National Paper Trade Association of the United States; while at the head table also were: E. S. Munroe, treasurer of the Canadian Paper Trade Association, of Toronto; N. L. Martin, general secretary, and E. A. Schofield, ex-mayor of St. John, N. B., first vice-president, and Edward Beck, secretary of the Canadian Pulp and Paper Association. Delegates from all parts of the country attended, some 50 in all being present. Reports of officers and various sections of the association were received and the address was made by William C. Ridgway, secretary of the sister association in the United States, who complimented the Canadian association on its complete membership, it being considerably ahead of the United States in this respect.

### Paper Merger Possibilities

In some quarters there is persistent talk of the not far distant possibility of a shift in the line up of news print manufacturers in the nature of two or more companies coming together. One man, whose opinion is not to be ignored, is reported to have declared that he believed control of Union Bag had passed and that Belgo and St. Maurice were nearer together in the matter of an amalgamation than ever before. If such were the case it would bring up the whole question of a St. Maurice Valley news print merger. It is an ill wind that blows nobody good, applies in the case of lower news print prices, for while the $65 rate is naturally going to affect the net profits of mills, particularly high cost ones, there are those who believe it is going to increase this industry in Canada as efficiently as an embargo on wood could do it.

### Sudden Death of Sir Henry Egan

Sir Henry Kelly Egan, managing director of the Hawkesbury Lumber Company, and director of the Bank of Nova Scotia, and Canadian Bank Note Company, also many other concerns, died at his home at Ottawa on October 18. Sir Henry had eaten his dinner at his usual hour and was in his customary happy mood afterwards. A few minutes before ten, however, he was seized with an attack of angina pectoris and passed away almost immediately. He was 78 years old. Sir Henry suffered severe monetary loss some few weeks ago, when a great fire swept the yards of the Hawkesbury Lumber Company of Hawkesbury.

### Canadian Paper Board Profits Declined

The annual report of the Canadian Paperboard Company, Limited, for the fiscal year ended June 30, shows that earnings, while slightly lower than the previous year, were sufficient to pay bond interest more than twice over, after reserving $40,000 for depreciation of plant and machinery. Gross earnings for the year amounted to $198,441, made up of gross profits from merchandising of $168,757, and discount, rents, interest, etc., receivable, of $29,683. From the total revenue there was deducted salaries and expenses of directors, clerical staff and travellers, $63,417, and sundry expenses, discount, etc., $29,080, or a total of $92,497. This left a profit for the year before, providing for bond interest and discount and income war tax, of $105,943. This amount was appropriated as follows: bond interest, $49,909; bond discount and expense, $8,052; and provision for income war tax for year $5,673; or a total of $63,624, leaving a balance, or net profit, for the year of $42,308. At the end of the previous fiscal year the balance at credit of profit and loss amounted to $106,901.

### St. Lawrence Paper Mills

It is reported from Three Rivers that the St. Lawrence Paper Mills, Ltd., have acquired the holdings of the Hon. Edouard Ouellet and Rodolphe Tourville, the two largest stockholders of the Tourville Lumber Company, of Louisville, Que. St. Lawrence Paper Mills will take possession of the mill and the limits early next spring. The Tourville Lumber Company has been organized some 33 years, but the mill dates back about 50 years. From 300 to 350 people are employed at the mill during the winter and 200 woodsmen are working on the limits of the company. These limits are situated in the Upper Riviere du Loup district. The average annual cut of the Tourville Lumber Co. varies from 500,000 to 600,000 logs.

### Exports of Pulp and Paper

According to the report issued by the Canadian Pulp and Paper Association, the total value of pulp and paper exported from Canada in September was $13,686,006, an increase of $1,085,396 over the total for August and of $2,029,540 over September, 1924. The value of wood-pulp exported in September was $4,843,226, an increase of $1,021,069 over the previous month and the highest monthly total recorded since the year 1920. Exports of paper in September were valued at $3,842,780, an increase of $64,327 over the previous month. For the first nine months of the current year, exports of pulp and paper were valued at $111,519,865 as compared with a value of $103,050,333 in the corresponding months of 1924, an increase for this year of $8,469,532. Exports of pulp for this period amounted to $34,181,917, while exports of paper accounted for $77,337,948.

Exports of pulpwood in September were 117,715 cords valued at $1,237,132, a decline from the previous month, when the total was 148,672 cords valued at $1,566,479.

Pulp wood exports for the first nine months of the year amounted to 1,185,495 cords valued at $11,775,969 compared with 1,090,425 cords valued at $11,140,838 exported in the first nine months of 1924.

National
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**Out here where Nature has painted such wonderful pictures the paper industry thrives and increases and calls for more Dilts Beating Engines.**

**For "paper is made in the beaters" and the Pacific Coast must keep pace with our growing markets, and build more mills and make more paper, and use more Dilts Beating Engines.**

For sixty years our shops have been produicng Hollander type beating engines and they are in use literally "around the World." Now we also build the Dilts approved NEW TYPE beating engines which are superior to others in combining Fast Circulation, Rapid Mixing, Uniform Beating, Quick Dumping, and with **no increase in power consumption.**

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You will be interested in Dilts approved NEW TYPE beating engines for your own mills.

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# Paper Demand in Chicago Fairly Satisfactory

## Not All Days Are Active Ones But Business Averages Up Fairly Well—Conditions in Paper Stock Market, However, Are Said to Be Rather Discouraging, With Evidences of Over-Crowding and Poor Leadership—Francis Hughes Co. to Be Sold

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, October 24, 1925.—Chicago's paper trade this week marked time. It went neither backward nor forward, generally, although there are companies which reported slumps on certain days, particularly Tuesday, while others reported a general increase in business for the entire week over last week, and over the same week of the previous year, etc. It was the concensus of opinion in the trade that no radical change could be expected in the market for any particular time.

### Substantial Business in Progress

For the fine paper division, Wednesday was a poor day, and the rest of the week was good. Business was as substantial as it ever is, without rushing. The entire month of September was a happy one for the fine paper men, and partly for the coarse paper men, too, because a general increase was enjoyed. September of this year for them was better than August, or September of last year. October looks rosier than September, so far, although there have not been many absolute statements backed with figures. It pays to be cautious. The increase this month is partly due to the good business of last, which means that more orders are being shipped. Fortunately, the dealers are able to report that just as many orders are being taken this month, and that is why the fine paper men are working merrily, even though business is not anywhere near the peak. They know they are making money. As reported last week the margin of profit of the fine and coarse paper business here seems to be increasing at present at a faster rate than the percentage of sales.

### Coarse Paper Burners Fairly Good

Coarse paper men are riding on the wave of a fairly good streak of business, which has stretched through this year, disappointing some when it did not rise, but in general maintaining a fair business for the dealers. The coarse paper men have made money, and think they will continue to make money. Of course, as one merchant said, they will and are always ready to increase profits. At the same time, if business treats them with no more hard knocks than they have suffered in the immediate past, there will be ample opportunity to be happy.

### Paper Stock Not Active

In paper stock the merchants are not in the same boat. Many are getting discouraged with the general condition of overcrowding and poor leadership in Chicago. There are many predictions that there will have to be a clean-up before business can be enjoyed profitably by the majority of men in the business. The main trouble seems to be that there are too many playing the same strings, or game, and too few in other branches of it. At the same time, there are many complaints that some of the men in it are willing to resort to policies which others will not, or that there are some merchants who, driven to fight hard by the rest of the trade, will consider competition the main thing in business, and fight tooth and nail for his business. But, of course, there are hosts of honest men making money in the business. Needless to say, these men have advantages over others who cannot make the grade. They have more money, better location, different business policies, better business administration, a bigger capacity for making customers, or something along that line. Like everything else, what is important is not the kind of business a man is in, but the kind of brains he has. If there are too many men in one kind of business, there is bound to be a leveling action, a release of the number above saturation, which make conditions unprofitable for the remainder of the trade. This can either occur at the top of the list, when some of the biggest may be persuaded by conditions to change either the business or the policies, or at the bottom, where there is plenty of room both for changes and for improvements.

### No Change in Prices

General prices for the trade in Chicago remain the same as last week, with no particular events of great importance to note on prices.

Some paper stock companies are reporting a temporary lull, on account of the overstocked market, which is not good for this time of the year. This season, which is usually good for paper stock, is neither favorable nor unfavorable.

### Francis Hughes Co. to Be Sold

The entire business of the Francis Hughes company, paper stock dealers, 2100 Loomis street, is advertised this week for sale. It is a large business, with a railroad siding for five cars, etc., and is an opportunity for some experienced paper stock merchant. While the general conditions in paper stock remain on the whole not satisfactory, this has little effect on the Hughes company.

Prices of the Continental Paper and Bag Mills on Western Wrapping Paper were withdrawn officially on Friday, with the announcement that new prices would follow in a few days. It is expected that this means an increase in prices. This is largely anticipated by the trade.

Walter Schumacher, manager of the Chicago Division of the J. W. Butler Paper company, has resigned that position to start a new real estate business in Florida.

The next meeting of the Paper Board Industry Association, to be held at the Waldorf Astoria, New York, November 18 and 19, will be attended by a large number of Chicago manufacturers and dealers in box board, corrugated and solid fiber shipping containers, and folding boxes. The Chicago group will include members of the Association, and the officials who have their offices here.

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### Want Plants to Make Straw Paper

CALGARY, Alberta, October 26, 1925.—"As a result of successful experiments in the making of paper and paper products from waste straw in Alberta, which have been conducted under the auspices of the provincial government, the government is now making an effort to interest capital in the proposal to establish a plant or plants in the province," states a government report just issued by the province.

"The government expresses confidence in the success of such an enterprise, and states that the results of the experiments made have been of the greatest importance not only to the farmers but to the general industrial development of the province."

All processes for the manufacture of pulp from straw were investigated and about two years ago a laboratory was set up in Montreal to test out the process of Olai Bache-Wiig. This process will be followed.

It is found that straw will be plentifully available from the western wheat fields, labor conditions and railway facilities and freight rates are favorable. Coal, salt and sodium sulphate are also available at fai. prices.

# Do You Know When to Stop Adding Size and Alum?

There is one method of accurately determining when the point of saturation is reached—the test given by the Valley Size Tester.

"Accurate," "Easy to operate," "Resulting in a real saving in size and alum," "No guesswork," "Has paid for itself many times;" those are the written opinions of the users of these remarkable instruments. It will be well worth your while to get full information regarding the Valley Size Tester.

*Write for descriptive booklet today.*

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2. Keeps size constant from run to run.
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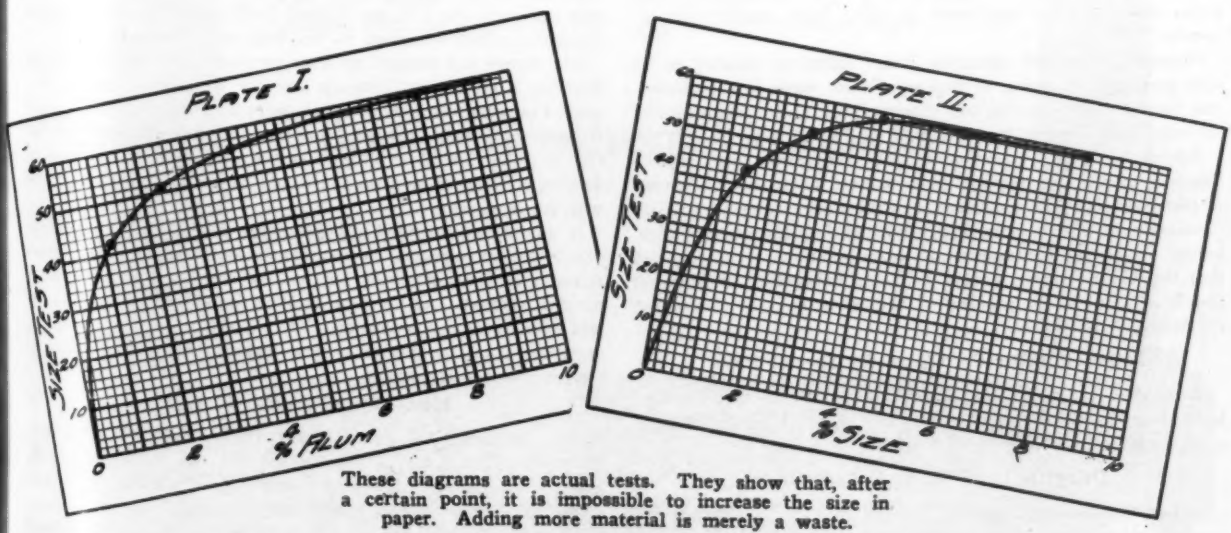


These diagrams are actual tests. They show that, after a certain point, it is impossible to increase the size in paper. Adding more material is merely a waste.

# What Paper Men Are Doing in Fox River Valley

## Northern Paper Mills of Green Bay, Wis., To Be Permitted to Build Its Own Power Lines—S. J. Gwidt Designs Inexpensive Filter by Which Paper Mills May Dispose of Waste Without Harm to Fish Life in Streams

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., October 23, 1925.—A settlement has been effected between the Northern Paper Mills of Green Bay, the Wisconsin Gas and Electric Company and the Wisconsin Public Service Corporation which brings to an end litigation started by the last mentioned concern to prevent the other two from building the joint tower line between Green Bay and Amberg. This permits the paper mill to build its line without interference and allows the W. G & E. to use one side of the towers. The agreement also prevents the exchange of power except in emergency. The W. P. S. had previously charged the W. G. & E., which is a subsidiary of the North American Company, with invasion of illegal territory.

### Disposing of Paper Mill Waste

S. J. Gwidt of Rhinelander, member of the assembly in the Wisconsin state legislature and for many years connected with the state conservation commission, says he has designed an inexpensive type of filter by means of which paper mills may dispose of their waste without harm to fish life in the streams. The recommendation was made after Assemblyman Gwidt had assisted in an investigation on reported pollution in the Wisconsin River where hundreds of fish died last spring and this fall.

S. B. Bugge, general manager of the Tomahawk Kraft Paper Company, Tomahawk, asserted that his concern is willing to render any assistance by disposing of mill waste otherwise than into the river, provided a system can be obtained that is reasonable in cost of installation and operation and will work out efficiently.

After considerable discussion of the situation by Messrs. Gwidt and Bugge, the latter has arranged to build a settling pond to experiment with the filtering of paper mill waste.

The pond is to have gravel banks with a trench dug around behind these banks to carry away the water which filters through the gravel. The paper mill company also plans to improve the banks of the river to keep waste on shore from washing into the stream.

"Almost all the mill managers I have called on assured me of their assistance in trying to dispose of their waste in any reasonable manner than emptying into streams," Mr. Gwidt has informed the state conservation commission.

Adolph Kanneberg, member of the commission, also reports that mill owners are showing much interest in the new movement to eliminate pollution, and many of them have expressed a desire to co-operate. Paper mills will be furnished with testimony taken before Park Falls conference on stream pollution. It is reported that the United States Forest Products Laboratory at Madison also is at work on the problem of finding methods of eliminating sulphides from affluent.

### Lakeview Paper Co. Closed for Several Days

The Lakeview Paper Company Mill at Neenah was again forced to shut down for several days recently when a blower connected with the boilers of the mill broke down.

### Delegates to Y. M. C. A. Convention

Judson G. Rosebush, head of the Patten Paper Company, Appleton, and several other paper concerns, and F. J. Harwood, president of the Appleton Woolen Mills, makers of paper manufacturers' felts, and G. E. Buchanan, secretary-treasurer of Appleton Wire Works, makers of paper machine wires, are delegates to the international meeting of the Y. M. C. A. at Washington, D. C.

Mr. Rosebush was elected at the previous international conference to preside at this meeting, and Mr. Harwood has been president of the Appleton Y. M. C. A. ever since the present beautiful building was erected here ten years ago.

### S. H. Clinedinst Goes to California

S. H. Clinedinst, head of the Menasha Printing and Carton Company and several other paper mills, has left with his family for Pasadena, Cal., where they will spend the winter.

### Frank J. Harwood Honored

The highest honor as well as the first of that nature to fall upon any layman of the Congregational church was conferred upon Frank J. Harwood, president of the Appleton Woolen Mills, for over 40 years connected with the paper industry through the manufacture of papermakers' felts and jackets, when he was elected moderator of the National Council of Congregational Churches at the national meeting in Washington, D. C., this week.

Mr. Harwood is the first lay moderator ever elected by the national council. He won the election over Governor Sweet of Colorado. President Coolidge, who is honorary moderator of the national council, delivered an address, after his introduction by Mr. Harwood. The Appleton man has held many offices of public trust here. He has served on the city library board, the city board of aldermen, the county board of supervisors, is president of the Appleton Y. M. C. A., has been moderator of the Wisconsin Congregational conference, and was for 40 years Sunday School superintendent of the local church.

### To Move Bridge to Telulah Mill

The city council of Appleton Wednesday night instructed the mayor and city clerk to enter into contract with J. O. Fischer for moving the South Island Street bridge from its location near South Oneida street to the Telulah mill of the Fox River Paper Company, which is located farther back on the island.

The matter was brought up when two communications, one from the Fox River Paper Company and one from the Appleton Machine Company, manufacturers of paper mill machines, were read. In both communications the firms promised to cooperate with the city, and the Fox River Paper Company signified its intention of deeding a strip of land on the island to the city for a right of way for a street.

It was at first intended to build a new bridge, but an investigation by bridge engineers showed that the structure on South Island street is in good condition but has outlived its usefulness in its present location. At the new location it will serve the Telulah mill with better fire protection. The Appleton Machine Company, at whose plant the bridge is now located, has indicated that it has no use for the bridge.

### Must Pay for Destroyed Eye

Vern Roberts, Nekoosa-Edwards Paper Company employee, must pay $3,794.40 for putting out the left eye of Oscar Allison, a fellow workman, during some rough play in a wash room over a year ago, according to a jury verdict in circuit court at Wisconsin Rapids this week. Suit was brought by the Employers' Mutual Liability Insurance Company of Wisconsin, which had to pay the injured man that amount. The eye was destroyed by a stick thrown in fun by Roberts on September 2, 1924.

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**PRESS ROLLS**

**of BARRE GRANITE**

It is already recognized throughout the industry that for the best results granite rolls should be used.

Furthermore, BARRE GRANITE Press Rolls are undisputably the best rolls to use. Ask any paper mill superintendent who has used BARRE ROLLS and let them tell you of their outstanding features.

Press Rolls of BARRE GRANITE are revolutionizing the whole paper making industry.

*Write for all the details and complete information*

**Jones Brothers Company**

BARRE, Vt. BOSTON, MASS.

BARRE GRANITE PRESS ROLLS

# Ontario Allots Additional Pulp Wood Limits

## Concession by Lands and Forests Department Means News Print Manufactured at Head of Great Lakes Can be Increased From 215 to 1525 Tons Daily—Construction of New Plants Guaranteed to be Undertaken Within 30 Days of Signing Agreement

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ontario, October 26, 1925.—A most important announcement to the pulp and paper industry was made by the Hon. James Lyons, Minister of Lands and Forests for Ontario, at a public meeting held in Port Arthur. It was to the effect that his department had allotted pulp wood limits to the Great Lakes Paper Company, of Fort William; the Thunder Bay Paper Company and the Provincial Paper Mills, of Port Arthur; and the Nipigon Fibre Company, of Nipigon, sufficient to increase the quantity of news print manufactured at the head of the Great Lakes from 215 tons to 1,525 tons daily, with an increased pay roll of nearly 10,000 men, which would mean an additional population to the "Twin Cities" and the district surrounding of some 40,000. The Hon. Mr. Lyons made it plain that the additional limits were being allotted under guarantees that construction of the plants would be undertaken within thirty days of the signing of the agreements, and the development which would be created would mean that Port Arthur and Fort William, which are popularly known as the "Twin Cities," would eventually become the greatest news print centers in the world. The amount of capital expended in power, pulp and paper would be $75,000,000 and the cost of power development of the two cities alone would be $34,000,000. The Hydro Commission will have to go beyond the height of land for water for power and will have to divert streams now flowing into Hudson Bay, into Lake Nipigon.

### Important Paper Jobbing House Sale

The United Paper Mills, of which R. I. Finlay, late president of the Canadian Paper Trade Association, is the head, has bought out the Allen Paper Company, of Simcoe street, Toronto, which was established three or four years ago by Charles Allen, and will take over the latter business on December 1. The warehouse of the United Paper Mills is located on Spadina avenue and a number of changes will be made in the premises to accommodate the additional stock. Charles Allen will go over with the new proprietors as general sales manager, a position for which he is well fitted by ability and experience. H. G. French, late secretary-treasurer of the Allen Paper Company, will be accountant for the United Paper Mills, which will also engage the staff of the former company. The United Paper Mills handle large stocks of book, writing, coated, ledger, cover and other special lines of flat papers and have a flourishing branch in Hamilton. The change is one of the most important that has taken place in Canadian jobbing houses for some time and the United Paper Mills will now be among the largest distributors of mill products in Canada, having built up a strong connection in all parts of the country.

### Paper Box Industry Is Active

The paper box industry at the present time is showing considerable activity. J. R. Forth, of the A. D. Shoup Company, Ltd., J. W. Ely, manager of Fibre Boxes, Ltd., Toronto, and others, when interviewed recently, stated that there was a rush of work on at the present time which was an indication that business must be good in many other lines. The demand for packages is strong with a noticeable improvement in the quality ordered.

"We are dependent upon other manufacturers for our business," said Mr. Shoup. "As times improve with them, so do they improve with us. When they are doing more business they want more packages. The boxes are about the last thing they buy; so if any concern can claim to be a true barometer of business conditions, ours can. The increased demand for the better quality of our product is another good sign from a general business standpoint. We have been operating to a normal capacity all year and since the annual rush commenced early in September, on a scale considerably bigger than that of the same time last year. Our staff in all departments has been working overtime.

"We find a better feeling in business and a growing disposition to buy. Confidence is more in evidence all round and we observe optimism abroad, which we consider is well warranted. Justification is found for it in the fact that many of our customers are very busy."

Mr. Forth added that his firm was preparing for a much increased business next year and had already ordered materials on that basis for the product that would be turned out from the factory next fall. Prices of raw material are showing a pronounced tendency to rise.

Mr. Ely, of Fibre Boxes, Ltd., said that they were running a night shift and the present was an exceedingly busy season. Prior to it things had been moving along pretty steadily, but he added that since the slump in 1920 started to lift, every month had been a bit better than the last and each year better than the previous one, a progress which he confidently expected would be maintained. The revival of trade had been more or less evident in many lines of business for the past couple of years and it had become somewhat more pronounced of late.

### Wonderful Record of Ladies Team

Title-seeking has been the favorite pastime of the girls employed by the Hinde and Dauch Paper Company of Canada, and the Girls' Club has been famed for its prowess in soft ball circles. Their success in winning the Ontario girls' soft ball championship, the defeating of the cream of teams from Western Ontario and finishing up with two straight victories over the Hamilton Zimmerknits, proves that the Hinde and Dauch girls are capable.

The Hinde and Dauch girls were Toronto city champions in 1922, 1923 and 1924. In the season just closed they again won the Major League and Sunnyside honors, laid claim to the city title, and marched through to the Ontario championship—the latter played under foreign rules. They practically clinched the major league in their first eight games. Hinde and Dauch lost three league games this year, two after the league was almost clinched and one in the Ontario championship hunt. Three of these games were dropped by one-run margins. In 1924 they lost only two games, neither affecting their winning aspirations.

### Notes and Jottings of the Industry

William Zieman, formerly of the Abitibi Power and Paper Company and the Great Lakes Paper Company, was in Toronto last week on his way from Port Arthur to New York.

H. B. Donovan, sales manager of the Canada Paper Company, Toronto, spent the past week in Montreal on business.

John M. Finlay and C. Taylor, of Ritchie and Ramsay, coated paper manufacturers, Toronto, were in Montreal last week attending the annual banquet of the Canadian Paper Trade Association.

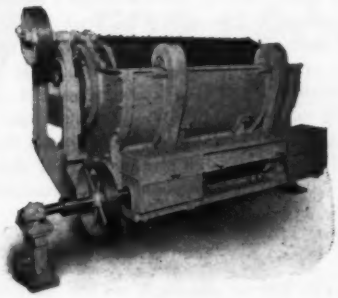
Peter Williamson, of Cochrane, manager of the woods department of the Beaver Fibre Wood Company, Thorold, spent a few days in Toronto recently.

William Innes, manager of the eastern office of the Interlake Tissue Mills, Toronto, who has been ill at his home in Montreal, is improving.

*(Continued on page 112)*

# Does Clean Paper Interest You?

**Cleanliness in a sheet of paper will be assured if the stock passes through a**



## "Moore & White" Improved Flat Plate Rotary Screen

PLANNED BY EXPERT DESIGNERS
CONSTRUCTED BY EXPERIENCED BUILDERS
USED BY MILLS WHO WANT THE BEST

The Moore & White Co.,
Philadelphia, Pa.
Gentlemen:

The two Moore & White Company rotary screens, installed in June, have just completed their first full month of operation. They have proven completely satisfactory and, I am happy to say, the production for the month was the highest ever obtained on the machine.

Yours very truly,
(Name of Mill on Request.)

**Mills now using "Moore & White" Rotary Screens gladly testify to the excellent results obtained by their use on all grades of paper.** ***Write us for complete information.***

## The Moore & White Co.

*Established 1885*

**North Philadelphia Station, Penna. R. R., Philadelphia, U. S. A.**

# Philadelphia Anticipates Brisk Holiday Trade

## Distribution of Both Fine and Coarse Papers Expanding Nicely—Paper Converters Working Overtime to Fulfill Customers' Growing Requirements—Christmas Wrappings and Specialties in Good Request—Box Manufacturers Operating on a Broader Basis

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., October 26, 1925.—Improvement in paper distribution continues to assume broader proportions as the days of the month wane. While the coarse paper dealer is sharing to a greater extent in the present demand for Autumn supplies and holiday requirements, the fine paper dealers, too, have been extending their shipments to the city consumers and, in greater volumes than at any time this Fall, to outside points in the state and surrounding territory. Gradually and soundly the business, as it pertains to the Quaker City, is assuming a more normal status and there is every indication of the present activity holding well into the early days of the New Year.

### Fine Papers More Active

Preparation for the closing days of the year and the opening of the new business cycle of 1926 is the dominant factor that holds the fine paper distribution to the more active markets that have been noted within recent weeks. Due to the fact that the printing industries were hard hit during the dull summer months, the fine paper dealers have experienced difficulties in securing from their allied trade the normal autumn orders for these grades of paper. Now that the printing industry is beginning to assume a livelier operation, there is proportionately more demand for paper. There is, however, keen competition, and business is to be secured only with effort and persistently keeping after the consumer. The coming new year's advertising prospects offer a good field for the paper salesman and from this source of work in the printing trade numerous orders for papers are emanating. Paper converters operating plants for the conversion of printers', stationers', and other allied industries' requirements in fine papers, are working overtime to take care of the growing needs for specially cut sizes and the newly introduced specialties used for economical mail advertising.

### Sales of Coarse Papers Broaden

All dealers handling coarse papers are fairly active and some of the larger firms are enjoying the best business of the year. All the grades in this line of paper production are just now being sought. Manufacturers in other fields, and mercantile houses, are purchasing heavily for holiday needs, wrappings and specialties adapted for Christmas goods. Bags are firming with the elimination of keen price cutting. Paper boards did not advance with the mid month as anticipated. The demand in the box making trades is holding well, all the boxmakers now being engaged in production of holiday requirements and standard containers on a broader basis of operation. Prices of board are $45 for news and $47.50 for chip.

### Pennsylvania Salt Elects New Director

Sydney Thayer, secretary and treasurer of the Henry Bower Chemical Manufacturing Company, Philadelphia, has been elected a Director of the Pennsylvania Salt Manufacturing Company, to fill the vacancy caused by the resignation of George A. Heyl.

### Paper Men To Attend Ad Convention

Philadelphia paper houses will be well represented at the Direct Mail Convention to be held in Boston during the coming week. Among those who will attend are Leon Beck and Andrew Simon, of the Charles Beck Paper Company; George W. Ward and William H. Hentz, of the D. L. Ward Company; President Norbert A. Considine, of the Paper House of Pennsylvania and Vice President of the Poor Richard Club; and A. B. Sherrill and Roland Ross, of Riegel & Co., Inc. The paper men will arrive in Boston in time to attend the gathering of the direct mail advertisers to be held in the last half of the week. Though President Leon Beck and Vice President Andrew Simon, of the Beck Company, will be in Boston, the local firm will celebrate the 61st anniversary of the founding of the company, during the week.

### Coarse Paper Dealers Hear Charles A. Wilder

A report of the activities of the recent convention held in Chicago was read before the local coarse paper men, when they met at the Bourse Restaurant last Thursday in their semi-monthly meeting. In his summary of the coarse paper activities scheduled for the national gathering, Charles A. Wilder, of Wilder Brothers, 12th and Brown streets, gave a detailed account of all that transpired affecting this branch of the trade. Mr. Wilder attended the National Association meeting as delegate from the Coarse Paper Division of the Philadelphia Paper Trade Association. A full quota of the membership was represented at the local meeting. Following the reading of the report, the paper men discussed present business prospects, all agreeing that a fairly well maintained market for coarse papers prevailed so far this Fall and that every indication was for continuance of the improvement throughout the remaining months of the year.

### W. Predmore To Travel South

A month's tour of the South will be the itinerary for W. Predmore, assistant treasurer of Riegel & Co., Inc., 6th and Cherry streets, during November. Mr. Predmore leaves here on November 1 and will make the round of the Southern States, winding up his trip in Louisiana, where he will look after the business interests of the company in that State. He will return to headquarters by way of Florida stopping over in the winter resorts, en-route home and expects to return here in time for Thanksgiving.

### Enterprise Paper Co. Adds Holiday Lines

Holly specialties have been added to the lines of the Enterprise Paper Co., 3rd and Callowhill streets, including such Christmas requisites as Holly boxes, designed wrappings, and specialties. The warehouses are now shipping these Christmas goods to the consumer. The firm reports that its present business shows an increase of 15 per cent over the same period of last year, and that the holiday requirements have been moving in proportionately larger volume.

### Universal Waste Products Dissolution Meeting

For the purpose of dissolving the firm and disposing of its assets, the Universal Waste Products Company held a meeting of the membership last Friday, in the offices of Edward J. Kirchner, Attorney for the Petitioner, in Stephen Girard Building. A petition for the dissolution of the Company is pending in the Common Pleas Courts and it was for the purpose of approving this petition that the members met. The Universal Waste Products Company for many years conducted a paper stock business in this city and was one of the largest wholesalers in the vicinity supplying raw materials. Thirteen barges were engaged in collecting waste paper and shipping stocks to New York and other points. Recently the Company decided to disband, and the Philadelphia warehouses were taken over by William G. Biles, manager for the company, who now conducts the business at 15th and Kater streets. The Wilmington and Chester interests of the company were consolidated with the Penn Paper and Stock Company, of this city, of which William J. McGarity is head.

# IMPCO

## CLOSED SYSTEM FOR GROUND WOOD PULP

"IMPCO" KNOTTER (For First Screening)
Over 500 in use on all kinds of stock

"IMPCO" CENTRIFUGAL SCREEN
Nearly 1000 in daily use

"IMPCO" TAILING SCREENER
Over 100 in use

"IMPCO" REFINER ~ ~ New
A Great Success

*We develop our own machinery, know how to build it and make it give results in your mill*
*Correspondence a pleasure*

## IMPROVED PAPER MACHINERY CO.

NASHUA, NEW HAMPSHIRE, U.S.A.

*Canadian Factory: Sherbrooke Machinery Co., Ltd, Sherbrooke, Quebec*

# A. P. & P. A. Urges Abolition of Stock Tax

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., October 28, 1925.—D. A. Smith, Vice President of the District of Columbia Paper Manufacturing Company, appeared before the Ways and Means Committee of the House of Representatives last week at its hearings on tax revision on behalf of the American Paper and Pulp Association. M. E. Marcuse, President of the Bedford Pulp and Paper Company, who is chairman of the General Tax Committee of the association was to have appeared before the Committee but was unable to do so because of illness.

Mr. Smith told the Committee that the association is urging the abolition of the capital stock tax and also asking that the jurisdiction of the U. S. Board of Tax Appeals be enlarged. In detail Mr. Smith said:

### Capital Stock Tax

SECTION 700

The Committee wishes to urge the abolition of the above tax. Our industry was taxed nearly $900,000 in 1923 under this tax, which was a direct levy on the capital invested in our industry. We estimate the amount paid last year to be not less than one million dollars. The total amount raised by the tax last year was ninety million dollars approximately. If the tax reductions to be made do not permit of the total loss of the income from this source, we would suggest that the amount might be raised more satisfactorily by a larger tax on income and that the Capital Stock Tax be limited to those corporations paying no income tax. We believe the savings to the Government in the cost of collection of the tax, if our suggestion be adopted, will be considerable and by the elimination of the necessity for the preparation of two tax returns, there will be a considerable saving to our industry also.

In any event, we would urge that the fiscal period covered by this section should be changed from July 1—June 30, to the calendar year, so as to run concurrently with the Income Tax period which would facilitate to some extent the preparation of the two tax returns.

### United States Board of Tax Appeals

SECTION 900

We recommend that the jurisdiction of the United States Board of Tax Appeals should be enlarged, so as to cover *all* issues arising under the administration of the Revenue Laws and that the benefit of appeal to this Board should not be limited as is now apparently the case, to appeals against assessments which have not actually been paid. We believe that taxpayers who have paid their taxes are equally entitled to the benefit of having their cases tried by this Board.

### Burden of Proof

SECTION 900

We believe that in any cases where the Commissioner of Internal Revenue claims that a deficiency in tax exists and the issues are appealed to the Board of Tax Appeals, the "Burden of Proof" instead of being borne by the taxpayer as at present, should be borne by the Commissioner of Internal Revenue. The present practice of placing the "Burden of Proof" upon the taxpayer is contrary to established legal practice.

### Decisions of United States Board of Tax Appeals

SECTION 900

We suggest that a clause be inserted in the law requiring the Commissioner of Internal Revenue to file a statement regarding decisions made by the United States Board of Tax Appeals, stating whether he acquiesces or not in these decisions, not later than sixty days after they have been given.

### Forced Waivers

SECTION 278-C

We recommend that the law be amended, so as to prohibit any action on the part of the Commissioner of Internal Revenue contrary to the spirit and purpose of the Statute of Limitations, so that if audit is not made by the Bureau of Internal Revenue in the statutory time, the taxpayers' return would be accepted as correct and the matter closed, to be re-opened only in case of fraud. Under the Bureau's present practice, taxpayers are practically forced to sign waivers of their rights under the Statute of Limitations, because if they do not do so, an arbitrary assessment is made on them sufficiently high to cover all possible contingencies, which we respectfully submit is unfair to the taxpayer, particularly in view of the fact that four years is now allowed the Bureau to audit tax returns.

### Reorganizations

SECTION 203

We believe the law should be amended in such a way as to make it apply more equitably in the determination of gain or loss in reorganizations.

### Affiliated Corporations

SECTION 240

We believe the law should be amended so that all disputes regarding the meaning of the term Affiliated Corporations may be eliminated, by incorporating therein a clear and definite statement as to what should be so considered.

### General

SECTION 211

Our Committee wishes also to respectfully bring to the attention of the Ways and Means Committee, the fact that there still exists a large number of tax cases in the files of the Bureau of Internal Revenue, involving hundreds of thousands of dollars, as far back as the year 1917, which have not yet been settled by the Bureau and suggests that the new law should contain a provision for the closing of these cases, at the earliest possible date.

The Committee also wishes to go on record as being in favor of a reduction in the present high surtaxes, which undoubtedly have had a great deal to do with the large investment made in tax-exempt bonds, all of which is respectfully submitted.

## Rosmarg Co. Gets Whitmore Plant

HOLYOKE, Mass., October 26, 1925.—John J. White, treasurer and manager of the Whitmore Manufacturing Company, said today that it would be from 30 to 60 days before he would give out the names of the men interested in the formation of the Rosmarg Paper Company whose option on the Whitmore plant has been accepted by Receiver Russell L. Davenport. The new company assumes the operation of the plant in about three months. Its tender of $50,000 and assumption of the mortgage of $100,000 held by the Holyoke Savings Bank was the best offer received, and Judge Broadhurst of the Hampden County Superior Court authorized the receiver to accept it if no better offer was made within ten days. At the expiration of that time no better offer had been received.

By the terms of the decree of the court the receiver must have satisfactory guarantee or security for the payment of all items and receive the initial payment of $5,000 cash within 10 days. There is considerable red tape in connection with the transfer of the property of the old company to the new Rosmarg company of which John J. White will be one of the largest owners and manager. Business has improved at the plant and an excellent showing for 1925 is said to be assured.

# THE GRIM REAPER *Does His "Stuff"*

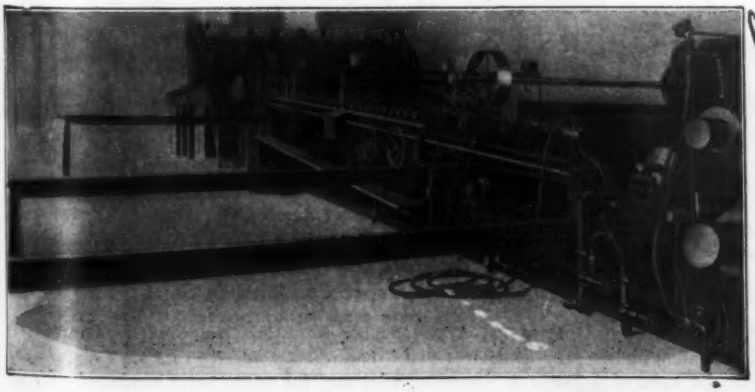
Long-life in paper-making equipment is desirable. But what appeared to be modern and up to date a decade or quarter century ago, has today been relegated to the "has been" class. Developments and improvements in late years, as expressed through the NEW BELOIT FOURDRINIER, have been so rapid and so revolutionary, that the science of paper-making has been going through a remarkable transformation.

The Grim Reaper has been at work and Father Time has taken his toll. Papermakers who have made a study of the NEW BELOIT have seen the advisability that prompts them to discard worn-out equipment that has seen its day and to replace it with this modern labor-time, and money-saving and efficiency-producing machinery.

We live in an age of wonders and those who keep pace with this advancement are going to be the beneficiaries now and in the years to come.

New mills are constantly being added to the NEW BELOIT roll. It will pay you to investigate.

*Send for Bulletin No. 9 now and get further facts.*



**The NEW BELOIT FOURDRINIER**

**Beloit Iron Works** **Beloit, Wis., U. S. A.**

**Since 1858 Builders of Paper, Board Mill and Container Plant Machinery**

# Simplification in Tissue Paper Industry

A year ago the Tissue Paper Manufacturers Association suggested to the National Paper Trade Association that it would be a good idea if the manufacturers and merchants would clear up some of the confusing and duplicating counts, sizes and weights which have for so many years complicated the Tissue paper industry.

### Indorsed by Commerce Department

This suggestion was also endorsed and urged by the Division of Simplified Practice of the Department of Commerce in Washington.

Several meetings between committees from manufacturers and merchants were held to discuss this matter and then the manufacturers began the rather difficult but necessary task of studying the market in order to determine exactly what sizes and weights could be eliminated and what sizes and weights retained.

A tentative recommendation was finally prepared by the manufacturers' committee and approved by the Tissue Paper Manufacturers Association at its quarterly meeting last July at Saratoga Springs.

### Form of the Recommendation

This Simplified Practice Recommendation was endorsed by the National Paper Trade Association at their convention in Chicago on October 7 and was then endorsed by the public at a meeting called by the Department of Commerce, held in Chicago the following day, October 8. The final form as adopted in complete wording is as follows:

Recommended
Standardization of Sizes for All Grades of Tissue
By United States Department of Commerce
and Approved By
Tissue Paper Manufacturers Association
and
National Paper Trade Association

| | |
|---|---|
| No. 1 and No. 2 Sheet Tissue | 20 x 30—480 |
| (Sizes to be standardized on | 24 x 36—480 |
| basis of 24 x 36—480—10 lb.) | |
| Tissue for Shoes | 8½ x 15 |
| (Sizes to be standardized on | 11 x 20 |
| basis of 24 x 36—480—10 lb.) | 12 x 24 |
| | 13 x 26 |
| Napkins (Bulk flat napkins 1000 to package) | |
| Plain Tissue (10 lb. basis) | 13 x 13 |
| Full crepe | 13½ x 13½ |
| Semi crepe | 13 x 13 |
| Over size | 18 x 18 |

Toilet Paper

Sheet toilet 5 x 7 in packages of 500 and 1000, basis 24 x 36—480—10 lb.

Roll Toilet 1000 and 2000 sheet rolls, basis 24 x 36—480—10 lb., in the following sizes, which alone shall bear the label:

4½ x 5
4½ x 4¾
4½ x 4½

On unbanded toilet paper the label shall be placed on the carton.

Size and count shall also be placed on all shipping containers of all of the above grades.

### Standing Committee Created

The conference created a Standing Committee of the industry to receive all comments or inquiries relative to this simplification and, at the proper time, to consider possible revisions in the light of suggestions received. This committee is composed of the combined personnel of the two committees which formulated the original program.

The simplified practice is to become effective on March 31, 1926, subject to annual revision.

To insure the right weights and sizes being purchased by the public, the Association has also adopted the two labels represented herewith.

The one with the circular seal is to go on all wrappers of toilet paper. The other one is to go on all packages of sheet tissues, the color of the label varying with the kind of paper contained in the package of sheet tissue as fololws: Purple, rag tissue; blue

LABEL FOR TOILET PAPER

No. 1 tissue; red, No. 2 tissue; green, manila tissue; black, colored; brown, anti tarnish kraft tissue.

### Association To Act As Agent

The Tissue Paper Manufacturers Association is to act as agent for the Department of Commerce in seeing that the size and count according to the simplification practice recommendation of the Department are followed.

At last the tissue industry is thus liberating itself from old irregularities of size and count and misrepresentation of goods, and through its Association is placing its products upon a high and

LABEL FOR SHEET TISSUES

guaranteed basis. The interest of the public is thus protected and the general quality and reputation of the indusry enhanced.

The Department of Commerce is procuring from all Tissue paper manufacturers a signed acceptance of this Simplified Practice and the use of these labels.

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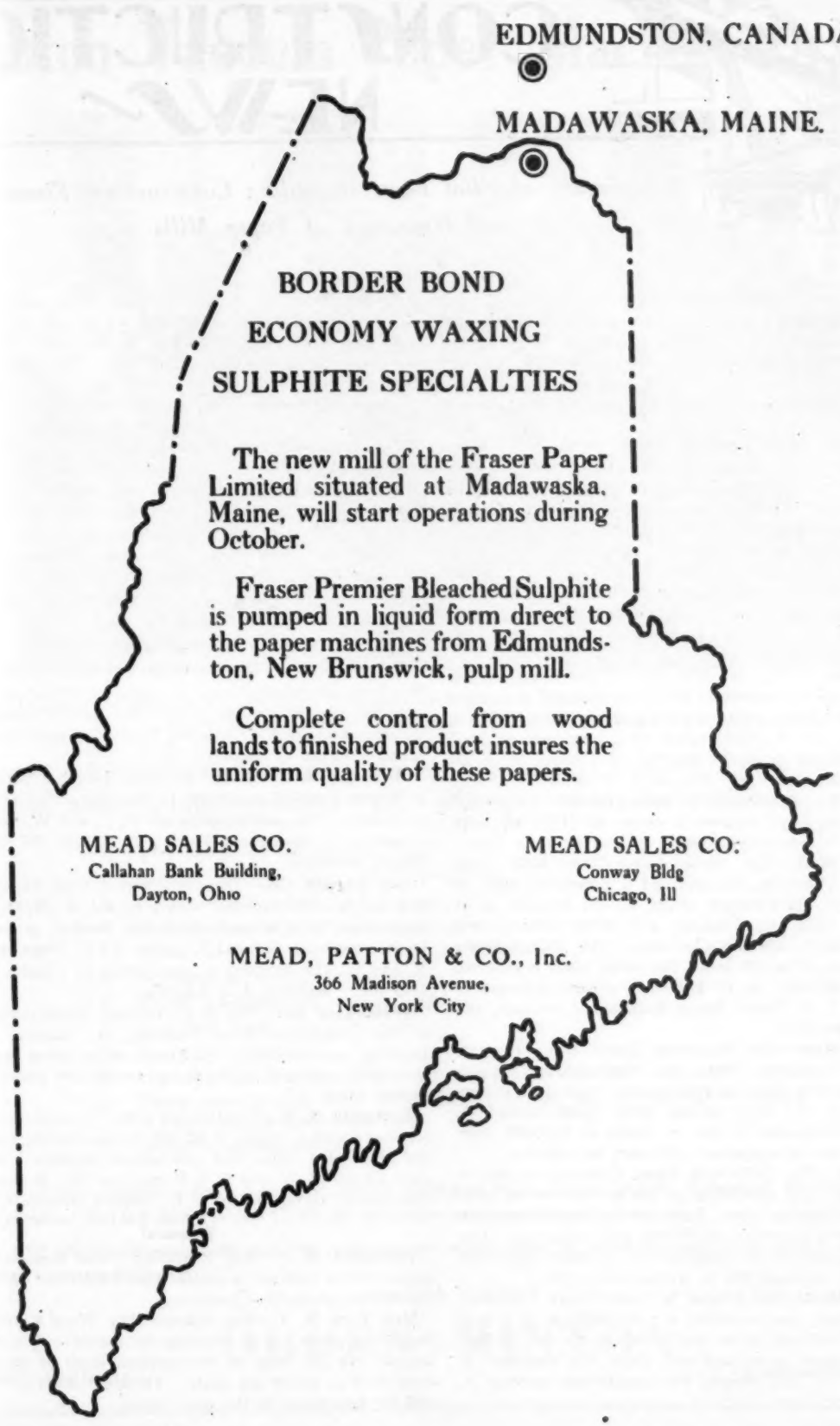
## Peshtigo Paper Co. Adds to Sales Force

[FROM OUR REGULAR CORRESPONDENT]

PESHTIGO, Wis., October 26, 1925.—The Peshtigo Paper Company announces that it has recently added to its sales organization James A. Lemmon, who was for many years connected with the Whiting Paper Company. Mr. Lemmon is now acting as sales representative for the company in Chicago and the eastern territory. Reuben C. Swan, who has been engaged in the Chicago office, will also represent the company in Chicago and will cover the western territory.




BORDER BOND
ECONOMY WAXING
SULPHITE SPECIALTIES

The new mill of the Fraser Paper Limited situated at Madawaska, Maine, will start operations during October.

Fraser Premier Bleached Sulphite is pumped in liquid form direct to the paper machines from Edmundston, New Brunswick, pulp mill.

Complete control from wood lands to finished product insures the uniform quality of these papers.

MEAD SALES CO.
Callahan Bank Building,
Dayton, Ohio

MEAD SALES CO.
Conway Bldg
Chicago, Ill

MEAD, PATTON & CO., Inc.
366 Madison Avenue,
New York City

# CONSTRUCTION NEWS

*A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills*

### Construction News

**Augusta, Me.**—The Cushnoc Paper Company will make extensions in its mill for increased production, including the installation of additional equipment. A contract for two pulp grinders has been let to the Watson, Frye Company, Bath, Me., and other equipment awards it is said, will be arranged in the near future.

**South Hadley, Mass.**—The American Tissue Paper Company has awarded a general contract to D. O'Connell's Sons, 480 Hampden street, Holyoke, Mass., for the erection of its proposed new mill addition, to be one-story, 50 x 105 feet, estimated to cost $50,000. A list of equipment to be installed will be arranged at an early date.

**Chicago, Ill.**—The Celotex Company, manufacturer of wallboard products, has leased a floor in the building at 310 West Superior street, for a term of years, and will equip for extensions in its laboratory, for research and other work. Possession will soon be taken.

**Camas, Wash.**—The Crown-Willamette Paper Company, 248 Battery street, San Francisco, Cal., has awarded a general contract to the Hansen-Hammond Company, Pittock Block, Portland, Ore., for the construction of a new mill on local site, to be equipped primarily for the manufacture of Kraft papers. It will be two and three-story, 82 x 322 feet, with smaller adjoining structures, including machine shop and power house, estimated to cost in excess of $1,000,000, with machinery. It is purposed to begin work at an early date.

**Bellingham, Wash.**—The Pacific Coast Paper Mills Company, recently organized, has awarded a general contract to Peter A. Brandt, 712 Farragut street, for the erection of its proposed local plant at Chestnut and Army streets, and superstructure work will begin at once. The main building will be two-story, 77 x 135 feet. The entire plant is reported to cost about $85,000. A. D. Bowen is general manager of the company. T. F. Doan, Sunset Building, is architect, and will supervise erection.

**Watertown, Mass.**—The Worcester Paper Box Company, Austin street, Worcester, Mass., has plans nearing completion for the erection of a new mill on site selected at Watertown. It will be two-story, totaling about 75,000 square feet of floor space, estimated to cost in excess of $175,000, with machinery. A list of equipment will soon be prepared.

**Seattle, Wash.**—The Zellerbach Paper Company is said to be planning the early rebuilding of the portion of its local storage and distributing plant, destroyed by fire, October 14, with loss reported in excess of $75,000, with equipment. The company specializes in the manufacture of paper bags and containers, with headquarters at Sacramento, Cal.

**Huntington, Mass.**—The Chapin & Gould Paper Company, Springfielfid, Mass., has completed the construction of a new addition at its local mill, to be used primarily for the production of a loft-dried paper, and will place the structure in service at once. It will provide for considerable increase in manufacture.

**Dallas, Tex.**—The Oak Cliff Paper Mill, operated by John G. Fleming & Sons, is running on a full time production schedule, developing production in the line of boxboard, wrapping papers and kindred products. The company recently placed a new plant unit in service, and expects to maintain the present manufacturing schedule for an indefinite period. It is reported that expansion is being considered. E. T. Fleming, Sr., is general manager, and J. B. Fleming, secretary and treasurer.

**Washington, N. J.**—A paper box manufacturing company, name temporarily withheld, has taken over the former local mill of the Victory Silk Company on Bryan Street, and will remodel and equip for a new plant. Extensions will also be made in the present building, to provide close to double the present floor space. It is expected to give employment to about 50 persons for initial production.

### New Companies

**Coventry, Conn.**—The Sterling Fibreboard Company, Inc., has been incorporated with a capital of $25,000, to manufacture fibre board, roofing papers and kindred products. The incorporators are J. T. Aspbury, Frank C. Taylor and R. V. M. Vanderport, all of Brooklyn, N. Y.

**Brooklyn, N. Y.**—Stoehr Brothers, Inc., has been incorporated with a capital of $10,000, to manufacture paper boxes and containers. The incorporators are F., J., and W. Stoehr. The company is represented by T. B. Cullen, 217 Havemeyer Street, Brooklyn.

**Los Angeles, Cal.**—The Consolidated Wall Paper Corporation has been incorporated with a capital of $50,000, to manufacture and deal in wall paper and kindred products. The incorporators are Howard T. James, F. W. Dunn and Charles S. Smith. The company is represented by Charles L. Evans, 1113 Story Building, Los Angeles.

**Wilmington, Del.**—The R. P. Andrews Paper Company, care of the Corporation Trust Company of America, du Pont Building, representative, has been incorporated under state laws with capital of $100,000, to manufacture paper goods of various kinds.

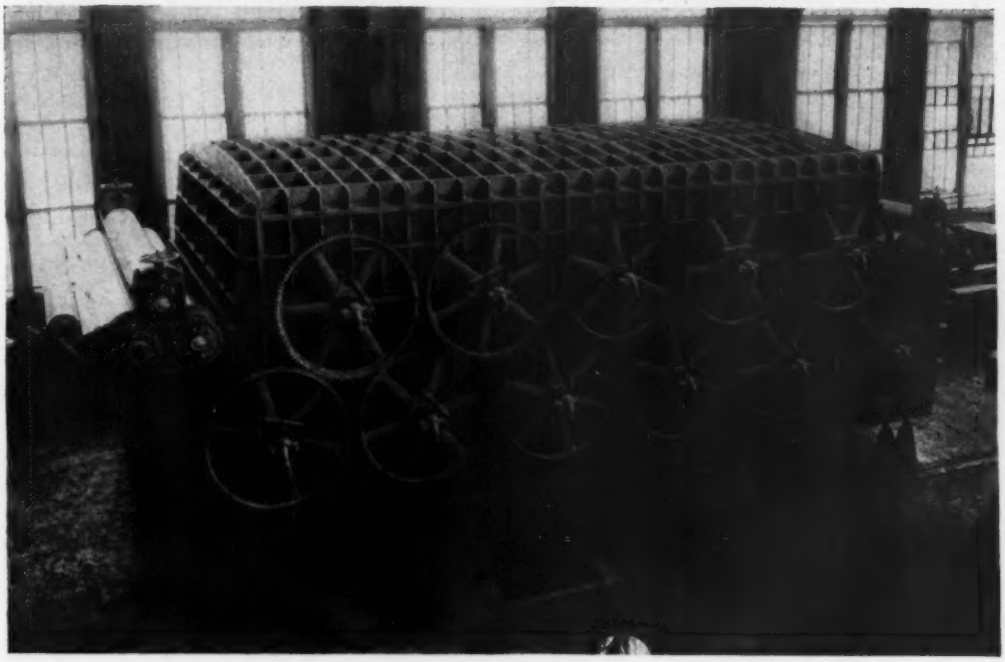
**Rochester, N. Y.**—The Genesee Fibre Company has been incorporated with a capital of $25,000, to manufacture cases, boxes, and other fibre, paper and composition products. The incorporators are M. A. and S. J. Ripson, and W. M. Smith. The company is represented by A. L. Shepard, Rochester, N. Y.

### Financial

**Piercefield, N. Y.**—The Piercefield Paper Company has arranged for an increase in capital from $400,000 to $1,400,000, to provide for proposed expansion.

**New York, N. Y.**—The Atlantic Pulp Wood Corporation is perfecting plans for an increase in capital and purposes to increase the par value of the common stock of the company from $1.00 to $10.00 per share. The total amount of increase will be determined in the near future.

# Minton Vacuum Paper Machine Dryer



The above cut shows a Vacuum Dryer containing 11 dryers 4 ft. diam. with a face of 154 inches. It is to be used to dry sized burlap which is used in making linoleum.

**A new and improved method of drying paper of ALL KINDS in which paper is dried under a high vaccuum (28" Mercury) with the following results:**

1. Very low drying temperature—100°F.
2. Stronger and better paper with higher pop test.
3. Requires less than half the floor space.
4. Uses approximately half as much steam.
5. Cost of dryer felts one-fourth of standard practice.
6. No vapors set free in machine room.
7. Drying independent of weather conditions.
8. Control of drying greatly improved.
9. Less power required.
10. Cost no greater than standard dryer section of same capacity.
11. Paper passes through dryer automatically and dryer will not have to be stopped in case of breaks which rarely occur.
12. Improved working conditions.

**Tests of this machine have been repeatedly made on News, Roofing Felt, Tub-sized Writing Paper, Specialties, Burlap and Cotton Cloth all with the most satisfactory results.**

**We will gladly demonstrate machine, drying rewetted news or rolls of your own paper or cloth. Write for appointment.**

***Inquiries Solicited***

## OGDEN MINTON

**Smith Building** **Greenwich, Conn.**

# Trade Marks Department

CONDUCTED BY NATIONAL TRADE-MARK CO., WASHINGTON, D. C.

**The following are trade-mark applications pertinent to the paper field pending in the United States Patent Office, which have been passed for publication and are in line for early registration unless opposition is filed promptly. For further information address National Trade Mark Company, Barrister Bldg., Washington, D. C., trade-mark specialists. As an additional service feature to its readers, PAPER TRADE JOURNAL gladly offers to them an advance search free of charge on any mark they may contemplate adopting or registering.**

STRONGFOLD—No. 212,922. Graham Paper Company, St. Louis, Missouri. For book paper.

AMSAVOCO—No. 210,214. American Sales Book Company, Ltd., Toronto, Ontario, Canada. For paper sheets, strips, rolls, pads, and the like suitable for manifolding use; printed forms for all kinds of business transactions, separate paper record sheets or strips assembled together in pad form, billing sheets, book leaves, etc.

CONTINUOUS INTERFOLDED—No. 197,406. American Sales Book Company, Ltd., Toronto, Canada. For same as above.

CORPORATE BOND—No. 200,342. Rockwell-Barnes Company, Chicago. For typewriter paper.

JIFFY JOT—No. 192,218. National Cardoscopt Company, Inc., New York City. For self-erasing memorandum pads.

TROJAN—No. 209,327. The Whitaker Paper Company, Cincinnati, Ohio. For writing paper, ledger paper, and bond paper.

WIZPAKIT—No. 214,453. American Sale Book Company, Ltd., Toronto, Ontario, Canada. For paper sheets, strips, rolls, pads, sales books, billing sheets, etc.

THIRST AID—No. 212,838. Stemar Displays Company, Chicago. For empty cardboard cartons.

10-IN-1 HERMIC SEAL—No. 214,505. Allen C. Scott, Omaha, Nebr. For shipping containers made of laminations of fiber board and canvas used for shipping ice cream cans containing ice cream.

ARISTOCRAT—No. 218,050. Central States Paper Distributing Company, St. Louis, Mo. For printed kraft paper.

## New York Superintendents To Meet

ALBANY, N. Y., October 26, 1925.—The Fall meeting of the Northern New York Division of the American Pulp and Paper Mill Superintendents Association will be held in the dining room of the Albany Felt Company, 1333 Broadway, here, Saturday, October 31.

The following program has been arranged for the meeting:

8 to 9 a. m.—Registration—Hotel Hampton.

10 a. m.—Meeting called to order. Message by Mr. E. T. A. Coughlin, National President.

10:30 a. m.—Trip of inspection through the Albany Felt Company's plant.

11:45 a. m.—Luncheon given by the Albany Felt Company.

1:30 p. m.—Meeting called to order.

1:45 p. m.—Illustrated lecture, "Size from Tree to Beater." This lecture is given by "The Paper Makers Chemical Co." and is illustrated by three reels of moving pictures.

2:45 p. m.—"White Water," by Mr. Harold M. Eastman, chemist at the Upson Company, Lockport, N. Y.

3:30 p. m.—Question box.

4 p. m.—Business session with election of officers.

4:45 p. m.—Adjournment.

6:30 p. m.—Banquet (given by Empire Size and Chemical Corporation, Albany, N. Y.).

Fred J. Rooney, secretary of the association, has issued the following notice in connection with the meeting:

"An interesting speaker will be in attendance at the banquet and there will be features of entertainment to make the evening enjoyable as well as profitable. Every superintendent or other paper mill executive, regardless of membership in the association, is most cordially invited to be in attendance at the meetings, and any member of other Divisions is urged to attend, if possible, this Albany meeting. Come prepared to ask questions on any problem that you may have. It is possible that someone will be able to offer a suggestion that will help you. Free discussion of general conditions is one feature of Superintendents' meetings. We do not want anyone to divulge any secrets they may have (if any) in reference to equipment or operation. There is value in our meetings if you come with the purpose of getting value.

"The Albany Felt Company is at 1333 Broadway, two miles from the railroad station, north. Trolleys for Troy run to the Albany Felt Company plant and pass the railroad station. The Albany Felt Company will have guides at the station."

## Alaska Paper Mills To Build

For the past four months, engineers have been making studies and reconnoissance surveys and collecting data for the Alaska Paper Mills, says the *Alaska Weekly*, of Ketchikan, Alaska, a concern now being incorporated under the laws of the territory of Alaska.

These preliminary surveys, when completed, are to be taken East by representatives of the company and presented to capitalists there, who are reported to be prepared to finance the project at an early date.

Power sites, aggregating 50,000 horsepower of hydro-electric energy, are being grouped under a single permit. It is not thought likely that the full possibilities—a news print papermill of 800 tons daily capacity, will be reached at once, but it is planned to develop enough of the power for the first unit of 200 tons daily output as early as possible.

Unless there may be later changes by the paper mill engineers, the location of the big plant will be at the head of Thorne Arm, twenty-five miles by water from the city of Ketchikan. Here are most ideal conditions for a large industry—unusually level ground, fine harbor, plenty of pure water, etc.

It is estimated that it will cost between $5,000,000 and $6,000,000 to develop a project of the estimated capacity of the first unit, inclusive of the power development, and upwards of $12,000,000 for the total capacity.

Public-spirited citizens of Ketchikan are co-operating with the promulgators of the project, and it is expected that the Bureau of Roads will extend the present Ketchikan-Saxman highway, so that this big industry may be built up with the principal banking and trading center.

The John P. Van Orsdel Company has charge of the forest engineering and the Miller Engineering Company the initial power development work. These are both Seattle concerns. For the present, C. R. Berry has general supervision of the organization and project work, aided by a corps of able assistants.

The plan of financing of this immense project is said to be most original and attractive, and will not, according to reports, be financed by public, but by private subscriptions.

## Seeks Pulp Mill Site in Northern New York

Albert Burgess of the United Pulp and Paper Company with headquarters in Chicago is in Northern New York according to the Ogdensburg *Journal* in the interest of his company looking over prospective sites for the erection of a pulp mill.

Mr. Burgess is reported to have said that his company will build a mill in St. Regis Falls or Plattsburgh, whichever location offers the most advantages. The chief reason for the company's desire to build in this section is said to be the proximity of the source of the pulp supply, Canada. The mill would be for the grinding of the raw product only, and the pulp would be shipped to various paper mills.

It is reported that Mr. Burgess will make a thorough survey of conditions at St. Regis Falls and then submit a report of his findings to the company. He was making a similar survey in Plattsburgh today.

NAY-LOR SPIRAL PIPE

# Naylor Spiral Lock-Seam Pipe!

In any length up to 40 feet — In diameters from 6 to 30 inches

A SMOOTH INTERIOR PRESSURE PIPE
WITHOUT RIVETS

*Especially adapted to*

## Paper Pulp Conveyance
## Exhaust Steam Lines
## Water Supply Lines

Much can be said of its many exclusive feature points, but the best evidence of its superiority is found in the fact that a recent investigation of over 200 installations failed to develop a single complaint.

***A Sample and further details will be sent on request. Write today.***

# Naylor Spiral Pipe Company

**1230 East 92nd Street, Chicago**

**Our Pipe Users Are Our Pipe Boosters**

# New York Trade Jottings

Louis Armstrong, of the Laurentide Company, Ltd., Que., was a prominent visitor to the New York paper trade last week.

* * *

Percy B. Wilson, of the Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, Ont., has been visiting New York in the interests of his organization.

* * *

J. V. Baron, of the Sherman Paper Company, Watertown, N. Y., has been visiting his many friends in the paper industry in New York City.

* * *

R. T. Houk, Jr., of the G. H. Mead Company, Dayton, Ohio, has been looking after the interests of his organization in New York during the past week.

* * *

J. D. Zellerbach, of the Washington Pulp and Paper Corporation, San Francisco, Cal., has been renewing acquaintance with his many friends in the New York paper industry.

* * *

A. E. Cadman, of the Canadian Pulp and Paper Association, Montreal, Que., has been visiting New York for the purpose of studying conditions in the local paper market.

* * *

Louis Bloch, of the Crown Willamette Paper Company, of San Francisco, Cal., has been welcomed by his many friends in the New York paper industry during his visit to the city.

* * *

E. A. Brissett, of Price Brothers and Company, Ltd., Quebec, was among the many notable members of the paper trade visiting New York last week.

* * *

W. H. Smith, of the Abitibi Power and Paper Company, of Montreal, Que., has been furthering the many interests of his organization in New York recently.

* * *

The Lexington Card and Paper Company, O. Kutno, proprietor, has been established, with offices at 124 East 110th street, New York. The new company will carry a complete line of paper, cardboard, envelopes, etc., for the printing and allied trades.

* * *

H. Hollesen, Inc., who have been the sole agents for the Norddeutsche and Koenigsberg strong unbleached and easy-bleaching sulphites for the past few years, are now selling direct to the consumers. Harry W. Draudt is connected with the firm as sales representative. The office of H. Hollesen, Inc., is located at 17 Battery Place, New York. Telephone Whitehall 1360.

* * *

A. J. T. Taylor, president of the Vickers and Combustion Engineering, Ltd., Toronto, and W. G. MacNaughton, secretary of the Technical Association of the Pulp and Paper Industry, who have been inspecting some of the leading pulp and paper mills in Great Britain, Sweden, Norway, Holland and Germany, arrived safely in New York last Saturday on the Cunard liner *Berengaria* after a stormy passage.

* * *

Mathieson Alkali Works Inc., reports for quarter ended September 30, net income of $342,224, after depreciation, depletion, Federal taxes, etc., equivalent after dividend requirements to $2.07 a share. This compares with $195,487, or $1.24 a share, in third quarter of 1924. For first nine months of 1925, net income was $1,095,628, equal to $6.72 a share, against $513,230, or $3.12 a share, in the same period of previous year.

* * *

Net income of the Corn Products Refining Company for the nine months ended September 30, was $5,262,023, equivalent after preferred dividends to $1.56 a share on the outstanding common stock. This compares with $7,959,910, or $2.62 a share, in the same period of the previous year. Net income for the third quarter was $1,815,959, or 54 cents a share, comparing with $1,666,775, or 48 cents a share, in the preceding quarter.

* * *

At the annual meeting of the stockholders of the Atlantic Pulp Wood Corporation directors announced that they anticipated recapitalizing the company, increasing the par value of common stock from $1 to $10 per share and stockholders of record will be given certificates of $10 par value for $1 par value stock. William H. Mitchell, president of the corporation, reports that upon recent estimates by timber authorities it has been found that the company owns considerable more pulp wood and other timber stumpage than at first estimated.

* * *

The research department of the Oxford Paper Company, 87 35th street, Brooklyn, N. Y., has recently obtained the services of H. V. Breding and W. C. Hisey, in the Research Department. Mr. Breding is from the Royal Technical College, Copenhagen, Denmark. He was formerly employed in the laboratory of the Arlington, N. J., plant of the Dupont Company. Mr. Hisey is a Junior member of the Technical Association, and has had experience with several paper companies in the West. Last year he spent at Syracuse in the Pulp and Paper Course of the New York State College of Forestry.

* * *

The paper trade is one of the first to be organized in all its branches for the ninth annual roll call of the American Red Cross, beginning on Armistice Day, November 11, together with its ally, the printing trade. The chairmen for the various groups are as follows: Stationers and stationer's supplies, William E. Ward, of John Ward and Sons, 115 Cedar Street; paper manufacturers and dealers, Adam K. Luke, West Virginia Pulp and Paper Company, 200 Fifth Avenue; paper box makers, T. Casselman, of T. and E. Casselman, Inc., 356 West 18th street; printing and allied trades group: Joseph Fleming, of Fleming and Reavely, 344 West 38th Street; printing machinery, Dan Casey, Miller Saw Trimmer Company, 500 Beekman street; printers ink and supplies, John Carroll of Sinclair and Carroll, 639 West 51st street; linotype, M. R. Alexander, of 17 Vandewater street; stereotype and electrotype, Fred J. Breuning of Raisbeck Electrotype Company, 409 Pearl Street; photo engravers, Harry Beck, of Beck Engraving Company, 461 Eighth Avenue; lithographers, W. P. Ten Eyck, of Snyder and Black, 204 William street; and bookbinders and pamphlet binders group, Raymond Baylis, of the E. C. Lewis Company, 461 Eighth Avenue. Each chairman will be assisted by a Trade Committee and by a House Delegate for each concern so that a large body of volunteers will comb the paper and printing industry during the drive, asking employers and employees to volunteer their dollars to the work of the Red Cross.

## Elected to Directorate of Hummel-Ross Co.

At the monthly meeting of the directors of Hummel-Ross Fibre Corporation, Hopewell, Va., held October 17, 1925, John I. Beggs and John L. Parchard, Milwaukee, were elected to fill vacancies on the board.

President Hummel reported the company's finances in good shape and plants fast approaching capacity production, with current earnings at the rate of $13.50 per share and sufficient orders on the books to furnish all departments capacity tonnage well into next year.

## Alaska Pulp & Paper Co. Resumes

The Alaska Pulp and Paper Company at Speel River, Alaska, it is reported, has resumed operations after an extended shutdown.

# West Virginia Pulp and Paper Company

**200 Fifth Avenue, New York**

***Western Sales Office***

**732 Sherman Street, Chicago, Ill.**

**MANUFACTURERS OF**

**Supercalendered and Machine Finished**

## BOOK and LITHOGRAPHIC PAPERS

**Offset, Envelope, Bond, Writing, Cover and Music Papers,**
**Index Bristol, Post Card and Kraft.**

## HIGH GRADE COATED BOOK

**and Label papers**

**also**

## BLEACHED SPRUCE SULPHITE PULP, SODA AND KRAFT PULP

**DAILY CAPACITY**
**OVER 1200 TONS OF PULP AND PAPER**

*MILLS:*

| | | | |
|---|---|---|---|
| Mechanicville | New York | Tyrone | Pennsylvania |
| Luke | Maryland | Williamsburg | Pennsylvania |
| Covington | Virginia | Cass | West Virginia |
| Spruce | West Virginia | | |

## News Print Service Bureau Meets

The fall meeting and luncheon of the News Print Service Bureau, held in the Tavern Room of the Hotel Commodore, New York, on Wednesday, October 21, was a largely attended affair. The noon luncheon was preceded by a morning discussion by members of the bureau, during which much of statistical value was given relative to the production and consumption of news print.

R. S. Kellogg, the indefatigable secretary of the News Print Service Bureau, reported that the production of news print in the United States for the first nine months of 1925 amounted to 1,124,000 tons, compared with 1,101,000 tons in the corresponding period of 1924, an increase of 2 per cent. The production in Canada for the same period amounted to 1,113,000 tons, compared with 1,016,000 tons in 1924, an increase of 10 per cent. Mr. Kellogg stated that the probable production of the United States and Canada combined for the year 1925 would amount to 3,000,000 tons, compared with 2,824,000 tons in 1924. Overseas imports for the first nine months of 1925 amounted to 108,000 tons, compared with 117,000 tons in the same period last year, a decrease of 8 per cent.

The publishers used 15,000 tons more in August, 1925, than in August, 1924, stated Mr. Kellogg, 20,000 tons more than in August, 1923, and also used more in August this year than in July. Stocks are reported to be lower than usual at this time of the year. Newspaper advertising in the first nine months of 1925 showed an increase of 3 per cent over the same period in 1924, and periodical advertising for the first ten months showed an increase of 2 per cent over 1924. Newspapers of more than 100,000 circulation printed, on an average, 28 pages daily and 109 pages on Sundays during the first nine months of 1925, compared with 28 daily and 105 on Sundays during the corresponding period in 1924.

Mr. Kellogg also mentioned that 13 new machines with rated capacity of 1,200 tons will be installed before the end of the present year and six machines with a capacity of 635 tons are definitely scheduled for 1926, besides other plans under way.

At the luncheon, the guest of honor, Allan H. Goldsmith, of the George H. Mead Company, gave one of the most interesting talks on the economic conditions of European countries ever delivered before a body of business men. Mr. Goldsmith has visited the continent many times during and since the war in the interest of the United States Government and has made a close and accurate study of Europe's industrial situation.

During an analysis of existing conditions as he found them he assured those present that the paper industry of the United States, especially as pertains to news print had little to fear for the next few years from the importation of paper.

J. Alexander of the National Industrial Conference Board also spoke.

## Bids and Awards for Government Paper

[FROM OUR SPECIAL CORRESPONDENT]

WASHINGTON, D. C., October 28, 1925.—The Government Printing Office has received the following bids for 500,000 pounds of newsprint paper in 48 inch rolls: Maurice O'Meara Company at 3.85 cents per pound; Eastern States Paper Sales Corporation, 3.545 cents; Mathers-Lamm Paper Company, 3.94 cents.

The following bids have also been received for 10,000 pounds of 25 x 38, 50, machine finish salmon book paper: Old Dominion Paper Company 7.89 cents per pound; R. P. Andrews Paper Company, 9.4 cents; Mathers-Lamm Paper Company, 7.9 cents and 8 cents; Barton Duer & Koch Paper Company, 7.6 cents; American Writing Paper Company, 9 cents; Reese & Reese, 7.485 cents; Doebler & Mudge, 8 cents; Lindemyer & Harker, 7.23 cents; Allied Paper Mills, 7.5 cents.

The Government Printing Office will receive the following bids on October 30.

For 21,750 pounds (1500 reams) of 21 x 32 14½, manifold onionskin paper.

For 3,043 pounds of various size first class chart paper.

The Government Printing Office will receive bids on November 2 for 25,000 pounds (500 reams) of 29 x 41 50 50 per cent rag, white machine finished book paper. Bids will also be received on the same date for 1810 pounds of 22½ x 28½—181 Salmon index Bristol board.

Doebler & Mudge have been awarded the contract by the Government Printing Office for furnishing 1500 sheets of 38 x 38 inch double faced corrugated straw board at $66.00 per thousand, bids for which were received on October 12.

The Printing Office will receive bids on October 30 for 9,450 pounds (300 reams) of 24 x 38—31½ pounds white bond paper.

## Uehling Instrument Co. Issues Bulletin

New bulletins 118 and 118-A describing the Apex $CO_2$ Recorder and Indicator are now ready for distribution by the Uehling Instrument Company, of Paterson, N. J. These instruments operate on the orifice principle and do not employ chemical solutions. The principle of operation is fully explained in the bulletins.

P. J. Riccobene has recently joined the home office sales organization of the Uehling Instrument Company, 473 Getty avenue, Paterson, N. J. Mr. Riccobene is a graduate of New York University in the Department of Mechanical Engineering and is a Junior Member of the A. S. M. E.

The Uehling Instrument Company, of Paterson, N. J., recently appointed the Ernest E. Lee Company, 115 South Dearborn street, Chicago, to represent it in Northern Illinois and Northern Indiana in connection with the sale of $CO_2$ Recorders, Fuel Waste Meters and other power plant instruments.

The Coon De Visser Company which has been representing the Uehling Instrument Company for several years in Michigan has just moved from 1772 West Lafayette Boulevard to 2051 West Lafayette Boulevard, Detroit, Mich.

## Gets $2,240 For Loss of Vision in One Eye

[FROM OUR REGULAR CORRESPONDENT]

GLENS FALLS, N. Y., October 26, 1925.—A case of unusual interest to pulp and paper manufacturers was before Referee Robert J. Cooper of the State Compensation Commission at a hearing in this city last week. Referee Cooper closed the case of Charles Delehanty on a prior award of $2240 for total loss of vision of the left eye. Mr. Delehanty was injured while employed by Finch, Pruyn & Co., of this city. He was handling pulp wood with a hook and in some way the hook slipped and struck him in the left eye. The accident is considered a most unusual one. In closing the case the insurance carrier was given the privilege to re-examine the man in about six months to ascertain if there were any signs of the vision being restored. The question considered at the recent hearing was whether or not the eye should be removed. It was decided not to do this until there was evidence that the other eye was being affected as a result of the injury.

## To Sell Quebec-Saguenay Pulp Co. Nov. 25

MONTREAL, Que., October 26, 1925.—Turcotte & Merrill, trustees, announce that the sale of the timber limits and other assets of the Quebec-Saguenay Pulp Company Limited will take place at Quebec in the sheriff's office, at ten o'clock in the forenoon, on November 25, 1925.

## Emerson Co. Installs New Machine

The Emerson Carey Fibre Products Company is installing a new paper machine which will be run entirely on strawboard for egg case fillers. It is expected that the new machine will be operating January 1, 1926.

# THE MOORE & WHITE COMPANY

MANUFACTURERS OF

## Paper Machines for all grades of paper

*High and Low Density Bleaching Apparatus*
*Friction Clutches Wire & Felt Guides*
*Rotary Screens Speed Changes*
*Log Splitters Pulp Savealls*
*Dusters Pumps Cutters*
*Lay Boys Reels Winders*

Booklets upon these subjects free on request

**The Moore & White Co.**

*Estab. 1885*

North Philadelphia Station
Pennsylvania R.R.
Philadelphia
U. S. A.

*Sorting Tables*
*Pasting Machines*
*Suspension Shake*

*Worm Washers*
*Pulp Thickeners*
*Finishing Room Trucks*

The Paper Mill Specialties listed above represent the finished product of many years' experience and intensive study to produce the most durable and economical machinery for use in the Paper and Pulp Mills.

Every machine is a highly efficient unit in making paper better than ever it was made before; quicker than ever made before; at less cost than ever made before. Here you find sound value for every dollar invested.

## Fiftieth Anniversary of the Link-Belt Co.

Fifty years have passed since the incorporation of the Ewart Manufacturing Company, the forerunner of the present Link-Belt Company, in 1875. In commemoration of the fiftieth anniversary, the Link-Belt Company has published an attractive book entitled "Link-Belt 1875-1925."

In this book it is mentioned that the patent of William Dana Ewart, a young implement dealer, from Belle Plaine, Iowa, for the detachable link chain, was dated September 1, 1874. Mr. Ewart first started to build a self binding harvester, but he realized the great need in such a machine for a detachable chain drive that could be repaired in the field; and he worked out the idea of a chain drive, the links of which could easily be replaced by the farmer, who up to that time had been wasting much time in going back to the barn or blacksmith shop for necessary repairs to the "strap-link" chain drives that were used on some of the first crude binders; or trying to adjust the flat belts, which stretched and tightened under varying conditions of heat or moisture in the field.

Late in 1874 when Mr. Ewart came to Chicago with a view to arousing some interest in his "detachable link chain," he succeeded in interesting John C. Coonley, a lawyer who was then president of the Chicago Malleable Iron Company. As a result a company was duly incorporated in 1875, under the name of the Ewart Manufacturing Company, for manufacturing detachable link chain. In 1876, the Ewart chains were exhibited at the Philadelphia Centennial.

New uses for the invention developed rapidly, and in 1880 the Link-Belt Machinery Company was incorporated "to design, build, and supply accessory parts, and install elevating and conveying machinery employing Ewart Chains," the plant for this company was built in Chicago.

In 1888 the Link-Belt Engineering Company was formed with a plant in Philadelphia. These two plants found increasing numbers of new uses for the chain, with the result that all three plants continued to grow in size, until in 1906 a consolidation of the three interests took place, and Charles Piez elected President.

It will be remembered that Mr. Piez was director General of the Emergency Fleet Corporation during the World War.

Mr. Piez is now Chairman of the Board of Directors, and Alfred Kauffmann formerly Vice-President in charge of the two Link-Belt plants in Indianapolis is now President of the Company.

From the humble beginning in 1875 this company now operates and owns ten large manufacturing plants, with seven shops and warehouses, and twenty-seven branch offices, and its products now include Elevating and Conveying equipment for all kinds of materials; complete equipment for the handling and cleaning of coal, on the ground and in the boiler house, complete coal Tipples and Coal Washing Plants, Sand and Gravel Washing and Preparing plants, Sand Preparing and Conveying Machinery for the modern foundry, Locomotive and Crawler type cranes, Silent Chain drives for industrial plants, and for the front end of the automobile—in fact, Link-Belt today builds complete equipment for Conveying, handling and power transmission.

## Good Paper Demand in Boston

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., October 26, 1925.—Boston continues to share in what seems to be a general improvement in all paper lines. Representatives of paper house in other states visiting Boston declare that this section is enjoying what all other sections of the country are enjoying—better business.

Right now in this section the fine grades houses are exceptionally busy, in fact much more so than last year at this time. The fall and early winter demand is in full swing.

Chip and news boards stock has not diminished to any great extent and the market remains steady with just enough orders filtering through to care for immediate needs.

While the call for roofing papers fell off this week it was to be expected. Business in this line has been fair enough most of the dealers agree and while mill activities along this line are now quiet the other departments of the mills continue active.

Coarse papers are holding firm and are in good demand. Especially noticeable is this in Kraft which, in the No. 2 grade has advanced one-eighth of a cent per pound this past week. No. 1 Kraft has enjoyed a week of large volume the jobbing houses reporting a steady demand. Even more gratifying is the fact that sales are being made upon a much more stable basis than recently.

Wax paper concerns continue to report busy days and the same may be said of the tissue and paper box specialties mills.

The rags and waste papers division show but little change, a slight demand showing itself only in one or two lines.

## Union Bag Conducts Salesmanship School

[FROM OUR REGULAR CORRESPONDENT]

HUDSON FALLS, N. Y., October 26, 1925.—The annual school for salesmanship and inspection for the New England and Pennsylvania territory of the Union Bag and Paper Corp. opened here during the past week with 45 salesmen and others connected with the selling organization of the corporation being in attendance. An interesting program prepared by officials of the company was carried out. A course of lectures and talks on salesmanship were given by officials of the company for the benefit of those attending the school. The executive force of the local mills participated in this part of the program, different speakers talking at each session. Tours of inspection were also made through the various factories of the corporation in order to acquaint those in attendance with the methods of manufacturing the products which they were selling.

The program included a dinner served in the corporation's new bag factory for the mill department and salesmen. The visitors and executive force of the local plant enjoyed a banquet at Hotel Carlton following the first day's sessions, covers being laid for sixty. The second day automobiles conveyed the visiting salesmen and officials of the company to the Glens Falls Country Club, where the party was entertained at an enjoyable banquet. On the closing day of the school a dinner was served in the new bag factory for the factory department and salesmen.

The annual school for salesmen, which was first established by the Union Bag corporation several years ago, has been most successful and the large attendance at these annual gatherings testifies to the interest of the sales organization.

## Foxboro Co. Opens Office at Atlanta

The Foxboro Company, Inc., of Foxboro, Mass., manufacturer of indicating, recording and controlling instruments, announces the transfer of its Southern Office to Room 426, Atlanta Trust building, Atlanta, Ga. This office, which was previously situated in Birmingham, will be in charge of A. W. Taber who has for several years been connected with the Foxboro Company as a sales engineer.

## Andrews Elected President of Griley-Unkle Eng. Co.

FORT WAYNE, Ind., October 26, 1925.—H. J. Andrews, sales manager of the Griley-Unkle Engineering Company, of Fort Wayne, Ind., has been elected president of the company, a promotion which has been earned through the success he has brought to the organization since assuming charge of the sale of its products.

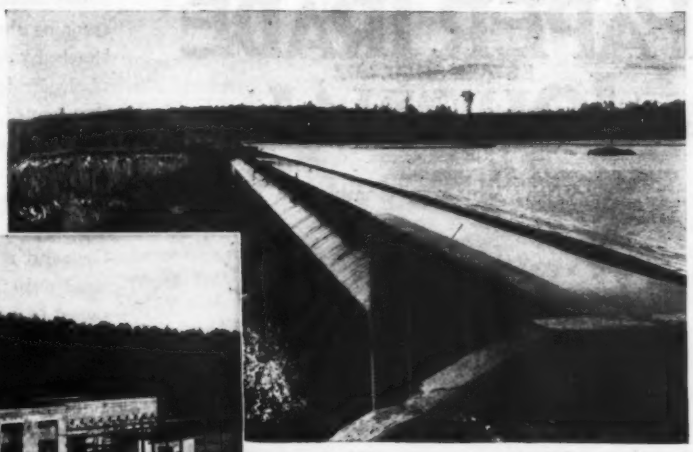
## Underwood Mills Make Improvements

The Underwood Paper Mills Inc., Division of the Tait Paper and Color Industries are making improvements and extensions at their plant at Plattsburg, N. Y., including the installation of a new wet machine.

# S M I T H

**HYDRAULIC TURBINES**

**installed at plant of St. Croix Paper Co., Woodland, Maine**

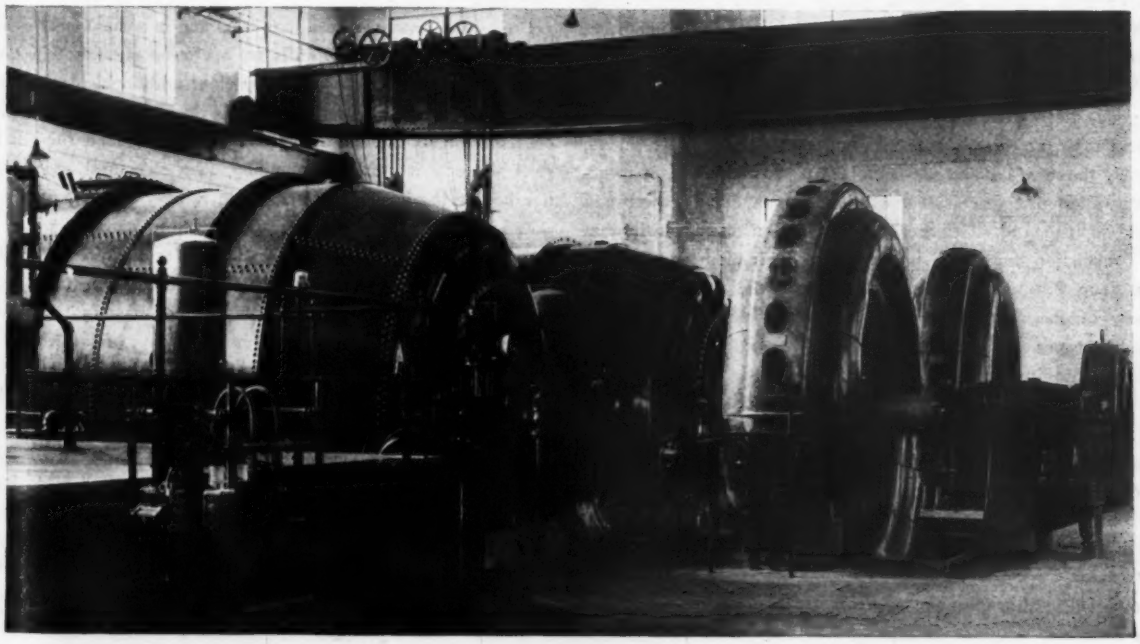


Accompanying views show exterior and interior of St. Croix Paper Co. Plant where two units of SMITH horizontal shaft turbines replaced old equipment, and developed

## APPROXIMATELY 90% HYDRAULIC EFFICIENCY

This extraordinary performance record for horizontal shaft twin-wheel units was accomplished without expensive alterations to penstocks and draft tubes.

If interested in similar reconstruction, ask for Bulletin.



# S. MORGAN SMITH CO., York, Pa.

PAPER TRADE JOURNAL
ESTABLISHED 1872
With Which Is Combined
PAPER
The Magazine of the Paper Industry
HENRY J. BERGER, Editor

Member A. B. C. Audit Bureau of Circulations

Vol. LXXXI New York, October 29, 1925 No. 18

## ANNUAL MILL NUMBER

It is obvious from this Annual Mill Number of the PAPER TRADE JOURNAL that the Pulp and Paper Industry on the North American continent is rapidly expanding. It is obvious, also, from the matter presented in this issue that the representative concerns of the industry are absolutely committed to the policy of keeping their plans thoroughly up to date.

The number of improvements that has been made to existing mills during the past year has been unusually large and includes the installation of a considerable number of new Fourdrinier and Cylinder paper making machines, and the auxiliary equipment to go therewith. It has not been possible to review and illustrate in this issue all the new improvements, but most of the important work of this kind, it is believed, is represented.

While the number of new pulp and paper making plants that has gone into commission during the past year is not large, some unusual mills, as regards both size and construction, are included. Possibly the most notable self-contained paper making plant to begin operation this year is that of the Newfoundland Power and Paper Compan, Ltd. at Corner Brook, Newfoundland which went into commission during the late summer. This monster mill contains four 234-inch Fourdriniers and all the necessary machinery of the most up to date type to prepare the pulp and finish the paper, as well as sulphite and ground wood mills with sufficient capacity for all the plant's needs. So completely has this development been planned that even special steamers were built to carry the paper to distant markets.

Another notable mill that is just going into commission is that of Price Bros. & Co., Ltd., at Riverbend, Que. This model news print mill contains two 234-inch Fourdriniers and all the necessary machinery to make and finish paper. This plant is included in the great development work that Price Bros. & Co., Ltd., started some years ago and which, although great progress has been made, is only partially completed as yet.

In the United States, possibly the mill to attract the most attention is that of the Fraser Paper Ltd., at Madawaska, Me., a subsidiary of the Fraser Companies, Ltd., at Edmundston, N. B. This is a thoroughly modern plant for the manufacture of Bond, Waxing and Sulphite specialties. It is equipped with two 166-inch Fourdriniers. Engineers have devised means of piping the bridge spanning the river between Edmundston and Madawaska so that bleached sulphite pulp may be pumped from the well-known plant of the Fraser Companies, Ltd. in N. B. to be made into paper at the plant of the subsidiary company in Maine. This ingenious arrangement, of course, cannot fail to be of great advantage to the new mill.

Another piece of new construction which has aroused considerable interest is the sulphite mill of the Fidalgo Pulp Manufacturing Company at Anacortes, Washington. Although a comparatively small plant, it has a number of unusually interesting features designed to meet unusual conditions. Its raw material is confined altogether to waste wood procured from the box makers in the Puget Sound district. This waste wood is purchased by the ton, a method that some representative men in the industry believe should displace the cord method which is now generally used by the pulp mills in buying their wood.

The fact is brought out prominently in the articles on mill improvements, with which this issue is crowded, that these betterments have been undertaken to effect economies, to increase production and to better the product. While these factors continue to influence the pulp and paper manufacturers on the North American continent, the industry cannot fail to prosper.

## BUSINESS EXPANDING

Under the stimulus of fall, business is expanding in practically all lines, the First National Bank of Boston finds after a survey of business conditions which it has just concluded.

Confidence is increasing, and there is a general disposition to make future commitments on a more extended scale than for some time past.

Production continues on a high level and in some industries night shifts are reported. Steel mills are operating at about 80% capacity; further gains are indicated by eight additional blast furnaces blown in during the past month and by an increase in unfilled orders after six months of steady decline. Demand for iron and steel products is steadily expanding, with structural and automotive buying the leading factors, while railway and export demand shows signs of improvement. Construction activity, which has been one of the chief sustaining factors to the present business movement, is surging forward; building operations so far this year have surpassed all previous records. While most of the automobile manufacturers are restricting output, some of the leaders are operating at full capacity to take care of large unfilled orders. Seasonal slackening continues in the tire industry, but indications are that the output for this year will establish a new record.

All branches of textiles are one the upgrade. Silk mills continue unusually active, with spindles working overtime and broad looms operating at nearly 90 per cent capacity. The call for rayon continues unabated, and plant facilities are being extended to provide for the incresing demand. The cotton industry has shown signs of a marked revival, as a result of strong demand, protracted curtailment, especially in the southern mills, low stocks, and promises of cheap raw material due to crop prospects of 14,759,000 bales the largest since 1914. The industry is in the best sold position in a year, and quotations have recently been advanced on some grades of finished goods. Moderate improvement is noted in the woolen

industry. Increasing activity is attributed to sharp curtailment during the second quarter, more stable raw material prices, and lower quotations on finished goods. In the leather industry there has been a further expansion of business, with prices firm. Some of the New England shoe factories, especially those turning out the cheaper grades, are operating night shifts.

The Department of Agriculture reports agricultural production well adjusted to ordinary needs. Practically all branches of the industry have shown a marked recovery from the recent depression, and the purchasing power of the farmer is now 93 per cent of the pre-war figure,—the highest for some time. The improvement in the farm situation has lifted the fertilizer and farm machinery industries out of depression and has afforded a strong support to the present activity in the motor vehicle and building industries and to the record sales of mail-order houses.

Retail distribution continues in large volume, as attested by unprecedented car loadings for the past two months. Further evidence is found in the sales of mail-order houses and chain stores, which for September were 10.3 per cent above the preceding month and 13 per cent in excess of a year ago. Domestic exports continue to increase; August shipments of merchandise to foreign countries were 15 per cent above the same period in 1924.

As a result of the prompt absorption of the heavy volume of goods by consumers, stocks of finished goods are only moderate in primary channels. The bulk of the inventory has been shifted from the warehouse to the individual home, and this movement has been greatly facilitated by the rapid extension of installment buying.

Since the early part of September practically all branches of the paper and pulp industry have continued to show moderate improvement. Demand is broadening, with prices firm, although there is no disposition to make long time commitments. Small lot purchasing still persists, but with frequent buying the aggregate volume is considerable.

The demand for news print is expanding in response to the improvement in the printing trade and to increased advertising. Shipments of news print during August were slightly above July and 2.2 per cent above the same period a year ago. The combined production of United States and Canadian mills for the first eight months of 1925 was 5 per cent above the same period in 1924.

The call for fine paper is also on the increase, but orders continue in small lots. Coarse paper is moving in good volume, with quotations higher on some grades. There is a strong undertone in both the chemical and mechanical pulp markets; prices are firm and prospects are good.

## Wood Utilization Conference at Syracuse

Last November there was held at Washington a national conference on utilization of forest products. The purpose was to outline policies which would advance the principle of closer and better utilization of wood.

This November—on Thursday the twelfth—a similar conference will be held at Syracuse to consider the situation in New York State and to similarly develop plans for closer and better utilization of forest products in the Empire State.

This state-wide conference is held under the auspices of the Empire State Forest Products Association and the New York State College of Forestry and will take place in the spacious building of the college at Syracuse University. The day sessions are at ten o'clock and two o'clock with an evening banquet at Hotel Syracuse.

## Paper Mill Laboratories Established at Quincy

One of the most important uses for Strawboard has been in the manufacture of fillers in cases for the storage of eggs. The use of strawboard for this purpose is as old as the practice and it is almost exclusively the only material used. In physical properties it excels any paper product available at reasonable cost. The location of the supply of raw material in close proximity to the areas of extensive egg production further renders it the logical material to use. In the storage of eggs, however, the development of objectionable odor under storage conditions in any material used for fillers is a matter of serious concern on account of its possible effect on the flavor of the eggs. In this respect straw cooked with lime in the usual manner is open to objection.

To meet this objection the National Association of Egg Case and Egg Case Filler Manufacturers in the spring of 1924 arranged for and supported a series of investigations at the Forest Products Laboratory to study the factors that contributed to or were responsible for the development of odor. As a result of the work the use of water soluble cooking agents capable of resolving the incrusting substances removed from the straw into water soluble compounds promised the best results. A trial on a mill scale in February, 1925, confirmed the results and four members of the association decided to go ahead with the development of the process and the introduction of the process into thin milk. Since Quincy, Ill., was centrally located to all of the mills in the group and the site of one of them it was decided to establish headquarters for the development work there.

For the purpose of process development and also to study the technical problems of the group a research laboratory was organized and incorporated under the name of The Paper Mill Laboratories, Inc. In addition to the usual equipment for studying the problems involving chemical research and physical testing they are completely equipped for making, cooking and pulping tests and studying the results. Investigations that give promise on a laboratory scale to be worthy of further study can be taken to the mill close at hand and tried out on a small multicylinder paper machine available for the purpose without interfering with mill production. The machine is large enough to be considered commercial, having a trim of forty-eight inches and a capacity of seven or eight tons of board per day.

The first work of the laboratories has been the perfection of the process heretofore referred to and the supervision of the erection in mills of each of the members of a chemical plant for making the liquor required for cooking. Operation was started recently in the first plant completed and the others will follow in quick succession. The board obtained has met expectations in regard to odor and in addition is capable of a better finish, is a better bender, and gives a pop test from fifty to one hundred per cent greater than the standards previously attained.

There is a feeling in the strawboard industry, at present, perhaps, hardly more than subconscious, that more accurate methods of mill control and improvements in processes or equipment are necessary if it is to hold its own against the encroachments of wood pulp or waste paper products. Mills located with reference to the supply of straw are usually unfavorably situated to use other materials. By improvements in product and economies in manufacture it is felt that straw has an important field in the paper industry and it is the aim of the laboratories to do whatever is possible to establish and extend it. It is an important step in advance when four competitors in a highly competitive branch of the paper industry have combined their resources in the support of a research organization to serve them all. The problems of one, however, are the problems of all and by the combination of effort the value of the results are increased fourfold. The facilities of the laboratory are open, also, to any mills or individuals having problems in the manufacture or use of pulp or paper and the long and varied experience of the staff in paper research and technology gives assurance of satisfactory service.

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Section of the
Technical Association of the Pulp and Paper Industry

AN ORGANIZATION FOR THE ENCOURAGEMENT OF ORIGINAL INVESTIGATION AND RESEARCH WORK IN MILL ENGINEERING AND THE CHEMISTRY OF PAPER, CELLULOSE AND PAPER-MAKING FIBERS GENERALLY; IT AIMS TO PROVIDE MEANS FOR THE INTERCHANGE OF IDEAS AMONG ITS MEMBERS IN ORDER THAT PROCESSES OF MANUFACTURE MAY BE MADE MORE EFFICIENT AND IMPROVED ALONG TECHNICAL LINES.

Conducted by W.G. MacNAUGHTON, Secretary

# The Evolution of the Sectional Drive *

By H. W. Rogers, Industrial Engineering Department General Electric Co.

The importance of the pulp and paper industry cannot be stressed too much as it now ranks fourth in capital invested and primary horse power, while it ranks second in the amount of power consumed.

Statistics indicate that there are somewhat over 1300 pulp and paper mills in the United States and Canada with approximately 1600 paper machines turning out between 8,000,000 and 9,000,000 tons of paper per year. This enormous production includes all grades of paper. About 20 per cent of this is newspring and the newsprint industry is of tremendous importance to Canada today. We may, therefore, confine ourselves to this end of the industry.

### Horse Power Per Ton Daily

The average modern news print mill which grinds its own pulp requires approximately 75 horse power per ton per day, about 6 per cent of which is used to drive the paper machine. This would seem to minimize the importance of this machine, but when we stop to consider that the entire production of a mill is absolutely dependent upon the paper machine, it begins to assume its proper importance and we can readily understand why it has received so much attention during the last five years.

No other industry presents so many interesting problems in power application and probably no other industry has tolerated the use of the old type of mechanical drive so long, with its line shafts, counter shafts, pulleys, belts, gears, clutches, etc. Its efficiency is low, its maintenance is high and it is difficult to explain why it has been tolerated so long. However, the old mechanical drive is rapidly being replaced by the more modern and more efficient electric drive. This change may be due to competition or it may be due to the demand for increased production; in either case, the outcome is the same and the result is a much more efficient and flexible drive which permits of an analysis of production costs not heretofore possible.

The paper machine is, without doubt, the most important machine with which we have to deal as the entire production of paper is dependent upon it, and yet, it has been one of the last machines on which any great changes or improvements have been made in the drive. Too much attention cannot be given to this machine.

### Influence of Drive on Product

The quality of the product depends very much upon the type of drive selected and the proper application of it with respect to the machine. Speed regulation, flexibility of control and uninterrupted service are all important factors and must be given careful consideration. For this reason it is desirable to have the paper machine and its drive a complete unit in itself, independent of the rest of the mill so that trouble in the rest of the mill will not result in any interruption in the actual production of paper.

There are certain parts of every paper machine which run at a constant speed regardless of the speed at which paper is being produced, and these parts, consisting of the screens, pumps, suction and agitators constitute what is commonly called the constant speed end of the paper machine. However, the driving of this end of the machine presents no difficulty whatever in its application and requires very little attention.

The variable speed end of the machine consists of a number of separate sections, which have been in the past and are very largely at the present time being driven from a single line shaft through a system of cone pulleys and bevel gears with friction clutches for starting and stopping each individual section separately if occasion requires.

### Requirements Exacting

A great deal of time and study has been devoted to the driving of the variable speed end of a paper machine and indeed it is no mean task because the requirements are exacting. The stock enters the machine at the wet end on the wire and consists of 99½% of water and ½% stock. Here the sheet is formed and in three seconds 99% of the water is removed after which the sheet passes through one or more press rolls and over the dryers to the calenders, reel and rewinder as finished paper with about 8% moisture, the whole operation requiring probably 40 seconds.

A continuous sheet must, therefore, be maintained throughout the machine and owing to its condition there is a slight difference in speed between each section which must be maintained absolutely. This difference in speed is called "draw" and varies from time to time with the condition of the stock and the grade of paper and must, therefore be capable of adjustment.

The drive must not only permit of a very close speed regulation but must also permit of adjusting the "draw" between sections and at the same time absolutely maintain the relative speeds of the various sections.

The requirements now specified for an electric sectional drive are a great deal more exacting, and are becoming more so every day, than it is possible to obtain on any type of mechanical drive. It is rather difficult to explain this attitude on the part of the manufacturers unless it be that they appreciate the possibilities of electric drive and are striving for perfection. Their attitude in this respect, however, is commendable and while it places an enormous

* Presented at meeting of Canadian Pulp and Paper men sponsored by the Canadian General Electric Co., Toronto, Ont., Oct. 12-13, 1925.

burden on the electrical manufacturer, it is nevertheless conducive of rapid progress and development which might otherwise be delayed.

### Demand Dates From 1919

Sectional electric driving of paper machines is not a new idea although the demand for it dates from 1919.

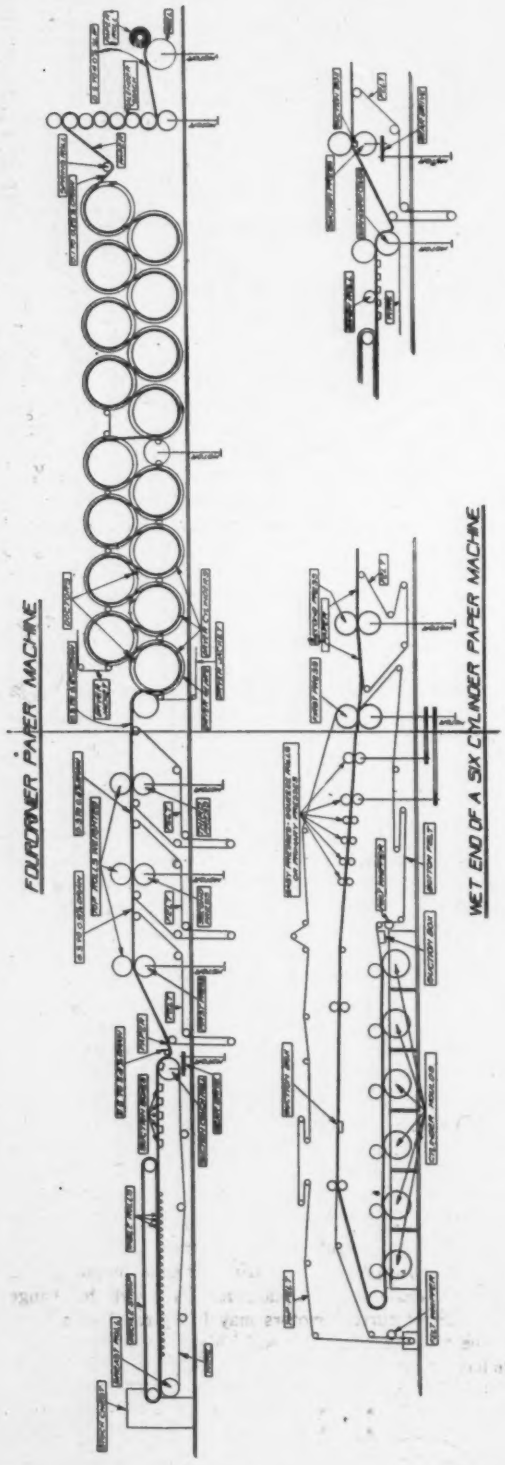


FIG. 1
Line drawing of a paper machine.

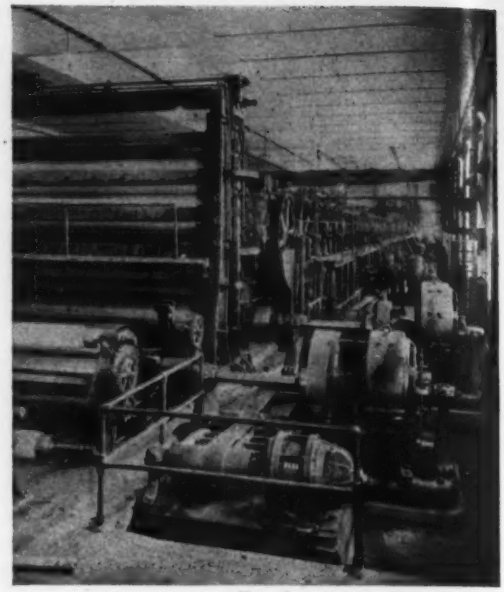

FIG. 2
Installation view of synchronous tie-in type of drive, with cone pulleys and belts at plant of Canadian International Paper Co., Three Rivers, Que.

Sectional paper machine drives were in operation at the Gould Paper Company in 1908 although there was no means of tieing the section together at that time. In 1909, the General Electric Company installed the first real sectional paper machine drive at the Chisholm Falls plant of the International Paper Company. This drive was a real synchronous tie-in type consisting of direct current motors with quarter phase collector rings and a mechanical speed changer for draw adjustment and although it operated successfully for months, it was evidently in advance of the times and eventually was taken out.

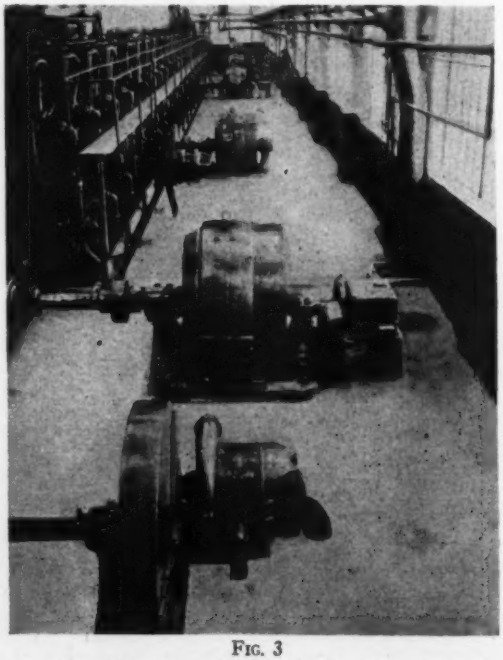

FIG. 3
Installation view of regulator type of drive at plant of Southern Paper Co., Moss Point, Miss.

TECHNICAL SECTION, PAGE 172

Subsequently the Harland Engineering Company installed a drive in Scotland in 1914 on a slow speed novelty machine and this was followed by the Westinghouse Company in 1919 when they installed their tie-in regulators on one of the machines at the Gould Paper Company, Lyons Falls, N. Y.

At that time the enormous demand for paper, which had been aggravated by the curtailment of paper machine production during the war, started a controversy regarding the relative merits of wide slow speed machines and narrow high speed machines. Needless to say, the high speed machine won out, although there is now a mild tendency to reverse that decision, and the demand for sectional drives was born at a time when most of the electrical manufacturers were not fully prepared to receive it.

It was frankly admitted among machine builders and operators that while the mechanical drive was a possibility on high speed machines, it was not at all practical on account of the high maintenance and this condition magnified the necessity for a solution to the problem.

### G. E. Arose to the Occasion

It must be remembered that there was practically no reliable data available on the power requirements of the various sections of the paper machine, nor was there any accurate data on "draws" because there were no means of obtaining it with a mechanical drive. However, the need was urgent and the General Electric Company arose to the occasion. In an incredibly short time the synchronous tie-in type of drive was conceived, built and put into successful operation at the Crown-Willamette Paper Company, Oregon City, Oregon, in spite of adverse criticisms and prophesies to the contrary.

In theory this type of drive was all that could be desired, in practice it fulfilled our expectations and its success was duplicated in eleven other installations during the same year.

But while the General Electric Company was meeting with such marked success in this development both the Westinghouse Company and the Harland Engineering Company were exploiting sectional drives of an entirely different character, although not in such large numbers.

These drives made it possible to secure a vast amount of valuable data, heretofore unavailable and a careful analysis of this data leads us to a discussion of the relative merits of the different types of drive and to the developments which have followed since their creation.

### Two Types of Drives

Strictly speaking, there are but two types of drives on the market today:

I—The synchronous tie-in type of drive, which is a distinct General Electric creation, wherein there is an actual interchange of energy between the various machine sections, and

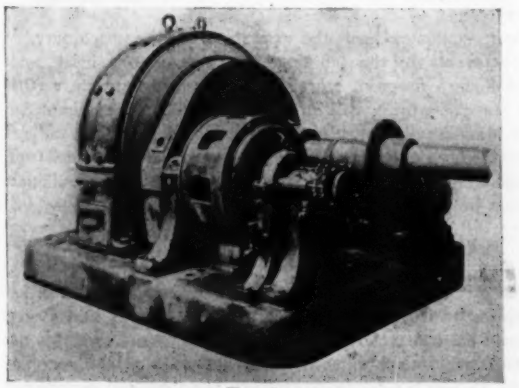

FIG. 4

Synchronous tie-in drive, with moderate speed, revolving frame, synchronous motor, installation at plant of P. H. Glatfelter Co., Spring Grove, Pa.

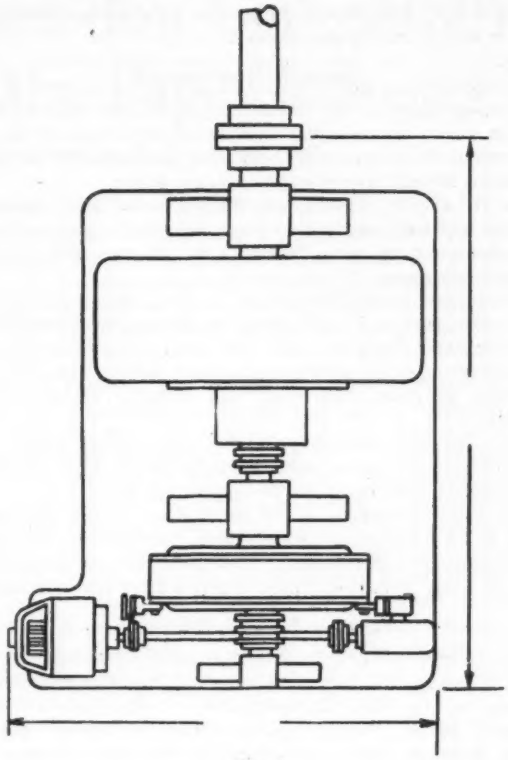

FIG. 5

Synchronous tie-in drive with slow speed, revolving frame, synchronous motor, line drawing.

where the relative speeds are held constant by synchronous motors. This, truly, is preventative rather than corrective.

II—The regular type of drive, wherein the speed of the various sections is maintained by shunt field adjustment on the motors. It is corrective in its operation since an actual change must take place to make the regulators function and the amount of this change determines the success or failure of the drive.

The General Electric regulator type, the Westinghouse drive and the Harland drive are all of this type and operate on the same fundamental principle of shunt field control, although the means employed to obtain the results are entirely different.

### Differences Between the Types

The real difference between these two types of drive can readily be appreciated when we consider the peculiar characteristics of the direct current motor when operating at reduced voltages and speeds. The speed regulation at full voltage and full speed may be 3 or 4 per cent or even less, but owing to the armature drop, it becomes extremely poor at low voltages. To maintain a constant speed under these conditions with a varying load requires a very wide change in field strength which detracts from the motor torque. In other words, a direct current motor will not deliver as much power under reduced voltages and this demands the use of over capacity motors where the regulator type of control is used.

With the synchronous tie-in type of drive the motor capacity need not be increased because the synchronous motors absorb the change in load and the direct current motors may be operated at a fixed field. This type of drive, therefore, while higher in cost and space requirements has the advantage of smaller capacity motors and will hold the motor speed within extremely close limits even where instantaneous load changes are encountered, whereas the regulator type of drive requires a certain time element between the change in load and the correction. However, modern improvement in the

regulator type of drive indicate that it can meet the requirements of commercial operation with the inherent disadvantage that larger capacity driving motors are required.

### Stages of Development

The development of the regulator type of drive was purely a question of first cost and space requirements, but in spite of this the synchronous tie-in drive, while remaining fundamentally the same, has passed through several stages of improvement.

I—The original type consisted of slow speed direct current motors with high speed synchronous tie-in motors connected to the direct current motor through a pair of cone pulleys and a gear reduction.

II—In the second development the cone pulleys and belts were eliminated and a high speed synchronous motor with revolving stator frame was used. The stator frame being driven by a small adjustable speed direct current motor. This change reduced the space requirements and overcame the objection to belts.

III—The final development of this type of drive utiltizes a slow speed synchronous motor mounted on the direct current motor shaft, thus eliminating the gear reduction.

The "draw" adjustment is still obtained by rotating the stator frame with a small adjustable speed direct current motor and space requirements are at a minimum. This drive has been furnished in all of its forms and has continued to give success from the start.

### Principle Entirely Different

The regulator type of drive was being developed by the Westinghouse Company, Harland Company, and the General Electric Company at the time the synchronous tie-in type was being developed by the General Electric Company. These regulator drives, however, while operating on the same fundamental principle, are entirely different.

1. The Harland drive utilized high speed geared motors with a mechanical differential device on each section. One side of these differential devices is connected to a master shaft running the entire length of the paper machine, while the other side is driven from the sectional motor through a belt and pair of cone pulleys. Any variation in speed on the motor is corrected by a movement of the ring gear on the differential which actuated a rheostat in the field of the sectional motor.

A great many of the Harland drives utilize the dryer section as the master, although in some cases they have used a direct current motor in the master shaft as a master and regulate the dryers as well as the other sections.

2. The Westinghouse drive utilizes high speed geared motors with an electrical master instead of a mechanical master, and a regulator on each section of the machine. One side of the regulator is driven from the master bus and the other side is driven from the sectional motor. In its operation it continually cuts resisistance in and out of the motor field circuit in small steps, the effective value of this resistance being determined by the angular displacement between the two elements of the regulator. In addition to this feature it also comprises a mechanical differential element which determines what section of the resistance shall be acted upon.

3. The General Electric drive has been confined largely to the use of slow speed direct connected motors without the use of gear reductions, although high speed motors have been used in a few cases. Individual motors are used for each section of the paper machine and a regulator controls the speed of each motor. This regulator is of the synchronous type with revolving stator frame, one element being driven from the sectional motor and the other element excited from the master bus. In operation it maintains a constant field strength on the sectional motor and operates on an angular displacement of one-half of one mechanical degree. It is designed with a vernier adjustment and 450 operating points and has a minimum of moving parts. It is not of the make and break contact type and remains stationary except when load charges demand action.

This regulator is a modification of a regulator designed and built prior to the starting of the first synchronous tie-in drive.

It has been said, in a critical manner, that the sectional drive is continually changing in design. In a sense this is true, because all of the drives on the market today are of a different design from those first offered. However, this should not be held out as an adverse criticism, since development is a natural process in the attempt to attain perfection and in a sense the more exacting conditions set up by the paper manufacturer are responsible for it.

### Number of Drives Installed

At present there are in Canada and the United States, either installed or building, 65 sectional drives operating on news, book, kraft, tissue, glassine and linoleum machines. Nineteen (19) of these are of the synchronous tie-in-type and forty-six (46) are of the regulator type.

Undoubtedly the section drive for paper machines will be more extensively used when its advantages are fully appreciated.

There are economies in space, construction, power and maintenance, and advantages in flexibility, ease of operation, cleanliness and speed regulation, which make it always possible to justify the use of a sectional drive rather than a mechanical drive where new machines are being considered and a mechanical drive is involved.

In conclusion it may be said that while the requirements established by the paper manufacturers have been extremely rigid, and at times have seemed a bit unreasonable in the light of past experience with the limited possibilities of the mechanical drive, we have nevertheless been willing to meet them more than half way and our energies have always been directed towards a development which will give a minimum cost without any sacrifice in operating characteristics.

## Hinde & Dauche Expand Gloucester Mills

Through many improvements made recently the Hinde & Dauche Paper Company has materially expanded its production of container boards in its plant at Gloucester, N. J., for the manufacture of containers and corrugated products. Not only have there been improvements in mechanical units but these have been supplemented by the erection of additional buildings to meet the requirements of plant developments. Among the machinery units that have been added to the newly constructed 250 foot building that was built to house it is a 75 inch trim machine with 42 inch dryers and with a capacity of 60 tons per day. This supplements the old machine with a capacity of 20 tons per day totaling the production of container board to 80 tons per day. In the recently completed boiler room there have been installed three boilers of the B.W. 500 type to give adequate power and modern equipment for the operation of the machinery. Other improvements to the buildings are a two-story brick and concrete modern fireproof storage and warehouse structure 60 by 200 feet for the storing of the raw materials. These improvements have been developed under the superintendent of the mills, V. H. Wendt, whose executive ability has been chiefly responsible for the prosperity of the Gloucester plant and under whose guidance production has been doubled within a brief period.

## Awarded Contract to Cut Timber

The Buskegan River Pulp and Paper Company, of Cochrane, has been awarded by the Department of Lands and Forests of Ontario the contract for spruce and balsam cutting rights over an area of two square miles in Ottawa township. The company has agreed to pay a total price of $5.10 per thousand feet for spruce and balsam, $2.20 a cord for spruce pulp wood and $1.20 a cord for balsam.

# The Meaning of Hydrogen Ion Concentration and Its Application to the Paper Industry*

By W. A. Taylor, V. P. LaMotte Chemical Products Co., Baltimore, Md.

According to the theory of electrolytic dissociation, all liquids of which water is a constituent contain free H and OH ions. When the number of H and OH ions are exactly equal, the solution is said to be neutral. If the number of H ions exceeds that of the OH ions, the solution is said to be acid. Conversely if the solution contains an excess of OH ions it is said to be alkaline.

The old methods of detecting acidity or alkalinity by means of litmus paper, phenolphthalein, etc., and of determining total acidity or alkalinity by titration with standard alkali or acid solutions, are of course well known. Titration does not, however, give any measure of the active acidity or hydrogen ion concentration of a solution. By hydrogen ion concentration we mean the actual concentration of *H ions* in a given volume of solution.

It is well known that acidity is due to the presence of H ions in a solution, the acidity increasing as the number of H ions increases. We are all familiar with the old terms strong and weak acids. By strong acids we mean those which are highly dissociated in solution to give a large number of H ions. By weak acids we mean those which are but slightly dissociated in solution and therefore give relatively few H ions. For example HCl is a strong acid and acetic acid is a weak acid. In titration 10cc of N/10 HCl and 10cc of N/10 acetic acid will of course both require 10cc of N/10 NaOH for neutralization. The number of H ions in N/10 HCl is, however, over 60 times as great as the number of H ions in N/10 acetic acid. It is therefore readily seen that the H ion concentration is not determined by simple titration. Since it is the H ion concentration and not total acidity which is of importance in the majority of chemical reactions, the importance of making H ion determinations is apparent.

Pure distilled water will conduct an electric current to a very slight degree. This shows that a very small proportion of the water is dissociated into H and OH ions. By the mass law,

$$\frac{\text{Concentration of H ions x Conc. of OH ions}}{\text{Concentration of undissociated } H_2O} = \text{a constant}$$

Since the undissociated water is relatively extremely large, it can be taken as a constant and the above equation therefore becomes

Conc. of H ions × conc. of OH ions = a constant

By electrical conductivity measurements, this constant has been found to be 1/100,000,000,000,000 or $10^{-14}$ at 21° C. Since in pure distilled water the number of H and OH ions are equal, each must have a concentration of 1/10,000,000 or $10^{-7}$.

### Meaning of pH Scale

This method of expressing H-ion concentration is very inconvenient and clumsy. Sorensen therefore suggested the use of the term pH, the pH value being the logarithm of the reciprocal of the hydrogen ion concentration. Thus

$$pH = \log \frac{1}{(H^+)}$$

Just as an acid solution is said to be normal when it contains 1 g. of hydrogen per liter, so a solution is said to be normal with respect to hydrogen ions when it contains 1 g. of ionized hydrogen per liter. The pH value can therefore also be defined as the logarithm of the denominator expressing the normality of H ions such as N/10, N/100, N/1000, etc.

This method of expressing H ion concentration has now been generally adopted. In the case of pure distilled water, in which the H ion concentration is N/10,000,000 or 0.0000001, the pH value would therefore be the log of 1/.0000001 or 10,000,000, which is 7.0. This value 7.0 is therefore the neutral point on the pH scale.

It will readily be seen that pH values below 7.0, such as 6.0, 5.0 etc. will denote acidity, the degree of acidity increasing as the numbers decrease. For example, if a small amount of HCl is added to pure distilled water, which has a H ion concentration of $10^{-7}$ or a pH value of 7.0, the acid will dissociate into positive H ions and negative Cl ions. The total number of H ions in the solution will therefore be greater than $10^{-7}$, and the solution will therefore be acid. Suppose the H ion concentration is found to be N/1,000,000. The pH value will be the log. of 1,000,000 which is 6.0. Similarly, if the H ion concentration is N/100,000 the pH value will be 5.0 etc. It should be remembered that since we are dealing with logarithmic values, a solution having a pH value of 5.0 is ten times as acid as one having a pH value of 6.0. Similarly a solution of pH 4.0 is 10 times as acid as one of pH 5.0.

Since by the law of mass action

$$\frac{\text{Conc. of H ions} \times \text{conc. of OH ions}}{\text{Conc. of undissociated molecules}} = \text{a constant,}$$

it is apparent that as the H ion concentration increases the OH ion concentration must decrease, and vice versa. Even in a strongly alkaline solution there are however some H ions and, for the sake of simplicity, it is therefore advisable to express both acidity and alkalinity in terms of pH values.

From the fact that neutral water has a H ion concentration of N/10,000,000, it is apparent that an alkaline solution must contain a smaller number of H ions. Let us assume that by adding a small amount of sodium hydroxide to pure water we decrease the H ion concentration to N/100,000,000. The pH value of this solution would be 8.0. Similarly if the H ion concentration is reduced to N/1,000,000,000 the pH value would be 9.0. This shows why all values higher than 7.0 indicate alkalinity, the degree of alkalinity increasing as the numbers increase. It should be remembered here also that a solution of pH 9.0 is 10 times as alkaline as one of pH 8.0.

It is therefore seen that the pH value is an absolutely accurate measure of the DEGREE of acidity or alkalinity of a solution. By making these determinations, definite values are obtained which can be recorded and which can be duplicated exactly. We are therefore not dependent on such vague and meaningless terms as slightly acid or alkaline, moderately or strongly acid or alkaline, etc.

The exact meaning of H ion concentration and pH values can be made clear by a few concrete examples. An N/10 solution of hydrochloric acid is one which contains 3.65 g. of HCl or 0.1 g. of H per liter. Electrical conductivity measurements have shown that at 18° C, 84 per cent of the HCl is dissociated. This means that 84 molecules out of every 100 do not exist as molecules but are split up into ions of H and Cl. The remaining 16 per cent of course exists as molecules. If the HCl were completely ionized, there would be 0.1 g. of H ions per liter. Since, however, only 84 per cent is ionized, we have 0.1×84/100=9.084 g. of H ions per liter. The normality of this solution with respect to H

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* Presented at the meeting of the Technical Association of the Pulp and Paper Industry at the Chemical Exposition, New York, week of September 28, 1825.

ions is 1/0.84=N/12. The pH value of N/10 hydrochloric acid is therefore the logarithm of 12 or 1.08.

An N/10 solution of acetic acid also of course contains 0.1 g of H. Electrical conductivity measurements however show that at 18° C. it is dissociated only to the extent of 1.36 per cent. Hence the hydrogen ion concentration is 0.1×1.36/100=0.00136. This is equivalent to an N/735 solution of H ions. The pH value of N/10 acetic acid is therefore the log of 735 which is 2.86.

We have shown above how H ion concentration and pH values are derived. In actual practice it is, however, extremely simple to make pH determinations. Two common methods are available; the electrometric and the colorimetric methods. Since the electrometric method requires elaborate equipment and an operator with considerable chemical training, we shall confine our discussion to the colorimetric method. This method was made possible by the development of the sulphonphthalein indicators by Clark and Lubs.

An indicator is a substance which changes in color with changes in the hydrogen ion concentration of the solution to which it is added. Each indicator has its own definite pH range. On the acid side of this range the indicator is completely transformed into its "acid color" and on the alkaline side it is completely transformed to its "alkaline color." For example, Bromthymol Blue covers the pH range 6.0-7.6. If the pH value of a solution to which Bromthymol Blue is added is 6.0 or below, the indicator will show a yellow color. If however the pH of the solution is 7.6 or above, the indicator will show a deep blue color. Between these two points the color will vary from yellow to blue, depending on the pH value of the solution. This indicator covers the neutral value pH 7.0 and should therefore be used in all titrations in which absolute neutrality is required.

The various indicators with their pH ranges and color changes are given below.

| *Indicator* | *pH Range* | *Color Change* |
|---|---|---|
| Thymol Blue (acid) | 1.2-2.8 | Red-Yellow |
| Bromphenol Blue | 3.0-4.6 | Yellow-Blue |
| Methyl Red | 4.4-6.0 | Red-Yellow |
| Bromcresol Green | 4.0-5.6 | Yellow-Blue |
| Bromcresol Purple | 5.2-6.8 | Yellow-Purple |
| Bromthymol Blue | 6.0-7.6 | Yellow-Blue |
| Phenol Red | 6.8-8.4 | Yellow-Red |
| Cresol Red | 7.2-8.8 | Yellow-Red |
| Thymol Blue (alkaline) | 8.0-9.6 | Yellow-Blue |

### "Buffer Action"

Before discussing the actual procedure for making determinations of H ion concentration colorimetrically, it is necessary to explain "Buffer Action." Clark describes buffer action as the resistance exhibited by a solution to change in pH through the addition or loss of acid or alkali.

This action can best be illustrated by means of an example. Pure water, as stated above, has a pH value of 7.0. If 1cc of 0.01 HCl is added to a liter of pure water, the pH value will be changed to about 5.0. Let us now consider a solution containing a mixture of sodium acetate and acetic acid. In this solution the dissociation of the acetic acid is very small.

$$CH_3\,COOH \rightleftarrows CH_3COO^- + H^+$$

The dissociation of sodium acetate is however large

$$CH_3\,COONa \rightleftarrows CH_3COO^- + Na^+$$

Now suppose we add a small quantity of HCl to this solution. It is immediately largely dissociated into H and Cl ions.

$$HCl \rightleftarrows H^+ + Cl^-$$

We therefore have in solution ions of H, Cl, Na and $CH_3COO$. Acetic acid ionizes to only a very slight degree. This means that $CH_3COO$ and H ions cannot exist together in solution to a very large extent. Therefore the larger part of the H ions from the HCl will immediately combine with $CH_3COO$ ions to form undissociated molecules of acetic acid, and the H ion concentration or pH value of the solution will be only very slightly changed. It will therefore be seen that considerable quantities of acids or alkalies can be added to solutions containing buffer salts without changing the pH value. In general a buffer salt is a salt of a weak acid or base. Examples of buffer salts are potassium acid phosphate, potassium acid phthalate, disodium phosphate, sodium citrate, etc.

Advantage is taken of this buffer action in making up color standards for measuring H ion concentration. A set of color standards consists of nine tubes. Take for example standards for Phenol Red. This indicator covers the pH range 6.8 to 8.4. Buffer mixtures having definite pH values are made up in intervals of 0.2pH, that is 6.8, 7.0, 7.2, etc., up to 8.4. 10 cc. of these various buffer mixtures are placed in separate ampoules which are made of nonsoluble glass. 0.5cc. of Phenol Red indicator solution, 0.02%, is then placed in each ampoule and the ampoules sealed. The ampoule containing the 6.8 buffer mixture will have a yellow color. That containing the 8.4 buffer mixture

LA MOTTE H-ION COMPARATOR SET

will have a deep red color. The ampoules containing the intermediate buffer mixtures, 7.0, 7.2, 7.4, etc., will have shades ranging from yellow to red, the intensity of color depending on the pH value of the buffer mixture contained in the given ampoule. Since the solutions used in making up the color standards are highly buffered and the ampoules are made of non-soluble glass, they are permanent for about a year, if kept in the dark and away from excessive heat when not in use.

Color Standards for the other indicators such as Bromcresol Green 4.0 to 5.6, Bromcresol Purple 5.2 to 6.8, etc., are of course made up in an exactly similar manner.

### Making pH Determinations

We now come to the actual determination of H-ion concentration or pH value. If the worker has no idea of the acidity or alkalinity of the solution to be tested, it is best to fill a number of the cavities in a spot plate with the solution and then add a drop of the various indicator solutions to different cavities. In this way he can determine the indicator in whose range the pH value of the solution lies. For example fill three cavities of a spot plate with the solution to be tested. To one add a drop of Bromcresol Purple indicator solution, pH range 5.2 to 6.8; to a second a drop of Bromthymol Blue, 6.0 to 7.6; and to the third a drop of Phenol Red, 6.8 to 8.4. If the Phenol Red gives a yellow or light red color, the pH of the solution will not be higher than 7.6. If the Bromcresol Purple gives a light or deep purple the pH will not be below 6.0. The pH of the solution must therefore lie in the range of Bromthymol Blue 6.0 to 7.6. If, however, all the indicators had given a yellow color it would be necessary to make additional tests with Bromcresol Green, 4.0 to 5.6, Bromphenol Blue, 3.0 to 4.6, etc., until the correct indicator was de-

termined. After a little practice with these indicators the worker is able to determine very easily and quickly the indicator in whose range the pH value of the unknown solution lies.

Assuming that the unknown lies within the range of Bromthymol Blue, the actual determination is made by means of the Comparator Set illustrated on opposite page.

This set consists of nine color standards and one ampoule of distilled water; three graduated test tubes of the same bore and thickness; and two tubes of standardized indicator solution, one of which is fitted with a 0.5 cc. pipette and nipple for measuring out the indicator solution.

The color standards are first removed from the block and placed in order in the inverted top of the case. The three graduated test tubes are then filled to the mark (10 cc.) with the solution to be tested and are placed in the three holes back of the slots, indicated by the positions A, B and C below:

| A | B | C |
|---|---|---|
| O | O | O |
| D | E | F |
| O | O | O |

To the middle tube, B, 0.5ml of the indicator solution is added. The tube of distilled water is then placed in the hole E, in front of the tube of unknown which contains indicator solution. Color standards are then substituted in the remaining two holes D and F, these standards being changed until an exact match is obtained, or until the color of the sample B lies between the colors of two standards differing by 0.2 pH. If the color exactly matches one of the standards, the pH is read off directly. If it lies between two consecutive color standards, such as 6.6 and 6.8, the reading of the sample is taken as pH 6.7. By this arrangement of the tubes, any effects of color and turbidity of the solution being tested are eliminated and results accurate to 0.1 pH are obtained.

Since the top of the box acts as a tube rack for the color standards contained in the set, extra sets of color standards, such as Bromcresol Purple 5.2 to 6.8, Phenol Red 6.8 to 8.4, etc., can be procured, without the case, and all measurements made in the one comparator block.

Since the pH ranges of the various indicators overlap, as shown by the list of indicators given above, it is usually possible to make determinations on any sample with sets of standards of two indicators, and thus insure accuracy in the measurement of pH values.

### Application

During the past few years Hydrogen Ion Concentration has been applied to a large number of industries, such as Pulp and Paper, Glue, Gelatin, Sugar, Dyestuffs, Water Purification, Sewage Disposal, Rubber, Tanning, Flour, Electroplating, General Chemicals and many others. It is the one control method which is of incalculable value to practically every manufacturer, no matter what his product. By its use many processes have been simplified due to accurate control, yields have been increased and the quality of various products has been improved. In many cases it has made possible the production of an absolutely uniform product, where previously there was no assurance that any one run would give a product exactly similar to the one preceding.

The application of Hydrogen Ion Concentration to the Pulp and Paper Industry is illustrated by the work of Merle B. Shaw, of the U. S. Bureau of Standards (PAPER TRADE JOURNAL, September 3, 1925). Through the courtesy of Mr. Shaw and the Bureau of Standards we were able to follow this work closely. As Mr. Shaw points out, the step in the process at which pH determinations are of most vital importance is the precipitation of the sizing on the fiber by means of alum. It has long been recognized that the stock should show a slightly acid reaction during at least a part of the beating and at the time of delivery to the paper machine. As stated above "slightly acid" is a very indefinite term which varies considerably, depending on the method of testing and on the meaning of this term to various operators. A "slightly acid" reaction to one worker might well be considered "strongly acid" by another and vice versa, since there is no standard by which to judge. The determination of H ion concentration or pH value, however, gives the exact degree of acidity or alkalinity in definite figures, which can be recorded and duplicated at any time by the same or different workers.

In paper making the water used is usually alkaline, and this alkalinity is increased by the addition of the sizing, which is usually rosin soap. The acidity necessary for precipitating the sizing is ordinarily obtained by the addition of alum. The amount of alum used is generally based on the dry weight of the beater furnish with little regard to the resulting degree of acidity.

The alum precipitates the sizing most efficiently at a definite pH value. If the stock is too nearly alkaline the sizing will not be completely and efficiently precipitated. On the other hand, additional alum over that necessary for precipitation adds to the cost of manufacture and has no beneficial effect. In fact it may cause the paper to deteriorate. By regulating the pH value in the Bureau of Standards mill, the amount of alum necessary for precipitating the sizing, to give a paper of good quality, was reduced by one-third of the amount ordinarily used. Aside from the saving of alum, an accurate control of the operation is obtained, which is of great assistance in producing a paper of uniform quality.

A second application, as pointed out by Mr. Shaw, is of importance to mills which are using untreated river water or any water which is turbid or contains organic matter. Alum is generally used in coagulating the suspended matter in water and it is well known that coagulation takes place most quickly and completely at a definite pH value, this value varying with different waters. By making pH measurements, the minimum amount of alum necessary for coagulation may be very exactly determined. Not only is alum saved but the addition of excess alum which will go through in the effluent on filtration and corrode the pipes, is obviated. The most important point is, however, that with this means of control water purification is greatly simplified, with the production of better water at a lower cost.

### References

The Determination of Hydrogen Ions, Wm. Mansfield Clark, Williams & Wilkins Company, Baltimore, Md., 1923.

Modern Cereal Chemistry, D. W. Kent-Jones, The Northern Publishing Company, Ltd., Liverpool, 1924.

Hydrogen Ion Concentration in the Paper Mill. Merle B. Shaw, PAPER TRADE JOURNAL, September 3, 1925.

## Pulp and Paper Concerns Order Stokers

The Combustion Engineering Corporation, Ltd., Toronto, Ont., has recently received orders for Stokers from the following firms:

The Port Alfred Pulp & Paper Company, Port Alfred, P. Q., has ordered two Type "E" Stokers, class 9, size 9'8" for its two horizontal water tube boilers, 486 h.p. each, and two Detrick arches size 9'x10' 6" wide.

The Riordan Pulp Corporation, Hawkesbury, Ont., has ordered one Type "E" Stoker, class 9, size 12' for its 600 h.p. boiler.

The Consolidated Mining and Smelting Company, Trail, B. C., has ordered two Type "H" Stokers, class 6, size 4', for its Wedge Roaster Zinc plant.

## Now Crocker-Wheeler Electric Mfg. Co.

The Crocker-Wheeler Company, Ampere, N. J., announces a change in their company name, effective November 1, 1925. The new name of the company will be Crocker-Wheeler Electric Manufacturing Company.

# Waste Liquors and Gases of the Paper Industry

## Survey of the Recent Domestic and Foreign Patent Literature on the Utilization of Waste Liquors and Waste Gases of the Pulp Industry, 1912-1924

By A. Schrohe[1]

Translated, with additions, by Clarence J. West, Chairman Committee on Abstracts and Bibliography, T. A. P. P. I. (Contribution No. 47 of the Committee).

*(Continued from last week)*

**111.** 1920. D. R. P. 323,627. E. Rasch, Berlin-Steglitz. Vegetable sizing of paper, textiles, fibers, etc. by the use of waste sulphite liquors.

Concentrated liquors are used which retain their original content of bases or in which it is increased by the addition of basic substances. If one decomposes the calcium compounds of the waste liquors and precipitates out the calcium, the adhesive power is decreased.

**112.** 1920. D. R. P. 324,241. H. B. Landmark, Drammen, Norway. Method for the decomposition of waste sulphite liquors by heating it at high pressures.

A gas mixture of sulphur dioxide and air, after the sulphur dioxide is oxidized to sulphur trioxide by means of electric sparks, is introduced into the autoclave. The liquor to be decomposed is conveniently treated with the gas mixture in a plate tower and the lignin then separated in a steam digester. [*See also* Canadian 209,881 (1921).]

**113.** 1920. D. R. P. 324,503. J. Soraas, Hardanger, Norway. Preparation of a fuel from waste sulphite liquors by its decomposition with oxidizing gases.

**114.** 1920. D. R. P. 324,787. A. Wipfler, Karlsruhe. Method of decolorizing cellulose waste liquors.

The waste liquors are treated with such metals or their compounds as yields insoluble dye lakes with the dyes of the liquors. The precipitation of the dyestuff follows, *e. g.*, with stannous chloride.

**115.** 1920. D. R. P.325,756. Friedrich Siemens, Berlin. Method of utilizing waste sulphite liquors.

The reduction of the disulphites and the salts of lignosulphinic acid is brought about by the action of carbon monoxide upon the waste liquors; calcium disulphite gives calcium sulfhydrate. The hydrogen sulphide recovered from this may be worked up into sulphur or sulphurous acid.

**116.** 1920. D. R. P. 327,685. Elektro-Osmose Akt.—Ges. (Graf Schwerin-Gesellschaft), Berlin. Preparation of a fat-soluble washing and cleansing agent.

Kaolin, clay, etc., preferably in a purified state the waste liquor obtained from the alkaline digestion of vegetable materials and waste sulphite liquors are mixed in such proportions that the sol condition of the silicates are permanent on washing. It is more advantageous to purify and concentrate the waste liquors and then add to the mixture the clay, kaolin, etc. The washing power of the clay is increased by the foaming power of the waste liquor.

**117.** 1920. D. R. P. 328,240. . J. Reerink, Homberg v. der Hohe-Gonzenheim. Method for the preparation of leather.

The unhaired pelt is fulled with sodium thiosulphate, during which waste sulphite liquor is added.

**118.** 1920. D. R. P. 328,882. Marcell Melliand, Mannheim. Shoe blacking from soda pulp liquors, waste sulphite liquors and dyestuffs.

The named mixture contains magnesium chloride to prevent the drying out of the blacking.

**119.** 1920. D. R. P. 329,004. British 133,852 (1919). J. Wingen, Maastricht, Netherland. Preparation of a covering material for painting and varnishing.

Sulphite waste liquor is mixed with a suitable dyestuff, clay, chalk, silicate, or a mixture of these or with hydo-carbons, as petroleum. This covering material dries in a few hours and becomes so hard that it can be removed only with a chisel.

**120.** 1920. D. R. P. 329,111. Fr. Mizgajski, Freising. Method for the preparation of alcohol and yeast from waste sulphite liquors.

The liquors are treated with molasses or products of similar composition, without special previous treatment of either product, in such proportions that the mixture is neutral or has a slightly acid reaction, whereupon the mixture may be fermented without the addition of special nutrients for the yeast.

**121.** 1920. U. S. 1,149,420. R. W. Strehlenert, Nol, Sweden. Method of utilizing the organic and inorganic constituents of waste sulphite liquors.

The patent is based upon the fact that free sulphurous acid in the liquor is transformed into sulphuric acid under high pressures and at high temperatures and calcium sulphate precipitates, the lignosulphites are decomposed and the lignin is precipitated as a brown powder. The sulphuric acid resulting during the course of the reaction acts only in the nascent state and cannot be replaced by other sulphuric acid. The compressed air or oxygen in the liquor serves as the source of the pressure; pressure, 20 kilos per square centimeter; temperature, 200° C. The pressure and temperature may be moderated somewhat by the addition of 0.5 to 2 per cent sodium bisulphite. As a preparatory step in the operation the lime may be precipitated as sulphite or sulphate. The method permits the recovery of 80 to 95 per cent of the organic substances of the waste liquor as a highly carbonized fuel.

**122.** 1920. U. S. 1,327,666. J. V. Fagan, H. G. Spear and R. B. Wolf, Berlin, N. H. Method for the recovery of sulphurous acid in the sulphite process.

Those vapors and gases which are usually blown with the digester liquor into the blow pit are blown into a condenser from the top of the digester and sulphur dioxide is separated from the other vapors and gases present by reaction with lime.

**123.** 1920. U. S. 1,359,074. L. A. Kingkiney, Centralia, Washington. Binder for sawdust, etc.

Sawdust (2 tons), heated to the point of carbonizing, is mixed with a mixture of waste sulphite liquors (8 gals.), gilsonite [an asphalt like liquid (20 lbs.)] and a jelly made from kelp and soda (4 gals.).

**124.** 1920. English 150,571. Danish 21,889 (1917). Swiss 73,107 (1916). B. Grätz, Berlin. Method of treating wood pulp liquors.

The waste liquor is de-acidified and rendered suitable for the preparation of artificial stone, by treatment with the ashes of fuel, particularly the ashes of lignite or other softer and brownish coals of comparatively recent vegetable origin.

**125.** 1920. Swiss 86,510. (Addition to 74,531.) H. H. Warmund, Zürich. Method of preparing a liquid packing material for pneumatic and other tires.

In order to render the packing material prepared from liquid binding agents (gums), sugar and ground rice according to the principal patent viscous and permanent, waste sulphite liquor and magnesia or talc are added.

**126.** 1921. D. R. P. 300,658. F Raschig, Chem. Fabrik, Lud-

[1] Papierfabrikant 23, 30-33, 63-65, 89-92, 158-161, 251-253, 284-287, 293-296, 306-307. (1925).

wigshafen a. Rh. . Method of preparing explosives from cellulose waste liquors.

Potassium or sodium nitrate is intimately mixed with the dry residue from waste sulphite liquor. Mixtures similar to black powder are obtained which, as compared with known brissant explosives prepared from ammonium nitrate and waste sulphite liquors, are directly explosive.

**127.** 1921. D.R.P. 331,742. H. TH. Böhme, Chemnitz i. S. Method of sizing and impregnating paper and paper products.

The use of waste sulphite liquors on the one hand and emulsions of cumarone resin and animal glue or cumarone resin and crude montan wax or crude montan wax colloids on the other is proposed. The waste sulphite liquor, in the neutralized condition, acts as a precipitating agent for the mentioned emulsions and also plays a part in the sizing action. For the precipitation of strongly alkaline emulsions one uses an acid sulphite liquor or one replaces the use of the light neutral liquor, which does not contain the necessary acid to bind the alkali, with other acid precipitating agents, e. g., aluminum sulphate, bisulphate or dilute acid. For the preparation of water resistant papers or paper products, the colored material is first treated with the acidified waste sulphite liquor and then with the emulsions.

**128.** 1921. D.R.P. 334,870. Berliner Dextrin-Fabrik Otto Kutzner. Berlin. Method for the preparation of an adhesive, filler, dressing material, etc. from waste sulphite liquors.

Waste sulphite liquors are treated with organic bases (such as aniline), aldehydes (such as formaldehyde) and acids (such as hydrochloric acid). According to the amount of the substances added to the sulphite liquors there results viscous, salve-like or solid mixtures.

**129.** 1921. D.R.P. 335,185. W. Philippsthal, Berlin-Grunewald. Method of preparing unburned bricks, tile and other forms, such as plates, tubes, etc.

These products are dried in the air in the usual manner, then coated with waste sulphite liquor, again dried and then heated.

**130.** 1921. D.R.P. 335,483. Berliner Dextrin-Fabrik Otto Kutzner, Berlin. Preparation of a filler and adhesive of high binding power from waste cellulose liquors.

The waste cellulose liquor (or that which has been evaporated to dryness) is mixed with dehydrated gypsum, giving a very viscous, gum-like mass.

**131.** 1921. D.R.P. 336,630. Cappenberg & Co., Witten-Ruhr. Preparation of adhesive from waste cellulose liquor.

Purified, acid-free waste sulphite liquor of at least 32° Bé is bleached with two to four percent of sodium thiosulphate at the ordinary temperature or with one to two percent at 90-100° C. and the bleached liquor intimately mixed with magnesium oxide siliceous chalk, kaolin, and similar mineral colors.

**132.** 1921. D.R.P. 336,798. Meta Sarason, Berlin. Method for preparing a disinfecting solution.

Cresols are mixed with waste sulphite liquors in which about one percent of sodium chloride has been dissolved. The solution thus obtained is richer in cresol than those prepared without the salt.

**133.** 1921. D.R.P. 337,330. Chemische Fabriken Worms Aktiengesellschaft, Frankfurt a. M. Method for tanning animal skins.

The dehaired pelts are treated with a tanning solution obtained by the reaction of salts of ligninsulfonic acid or waste sulphite liquors with ferrous salts.

**134.** 1921. D.R.P. 339,401. Albert Röbelen, Munich. Preparation of peat briquettes by forming from dried peat mixed with concentrated waste sulphite liquor in the cold without the use of high pressures.

The forms, prepared for drying, are, after a short time, covered with a uniform coating of waste sulphite liquor, which forms a crust that renders them impenetrable to the air. In order to increase the water-resisting properties of the waste sulphite liquors, the peat-waste sulphite liquor mixture may contain talc, kieselguhr, alum, asbestos or alkaline solutions of resins, horn waste, etc.

**135.** 1921. D.R.P. 339,741. Leo Stein, Fulda. Method for utilizing waste sulphite liquors.

The waste liquor, preferably after previous warming, is treated with such an amount of a gelatinous material as will just precipitate completely the tannic acid and lignin like compounds present. After filtration there results a much lighter liquid, which still contains large amounts of valuable organic materials and is suitable for dressing, sizing and similar purposes. In the addition patent 340,453 (1921) there is proposed the partial precipitation by gelatinous substances in the presence of a colloidal material, such as gum arabic; this results in a fine suspension and therefore a better decolorizing of the liquor. The colloid remains in the waste liquor and increases its value as a dressing agent, etc. According to addition patent 341,690 (1921) the decolorized liquid is treated with a further amount of gelatinous material; in order to prevent the appearance of the lignin-sizing material, starch or the like is added to the liquor.

**136.** 1921. D. R. P. 340,904, and addition patents 348,385 and 348,286. Deutsch-Koloniale Gerb- und Farbstoff-Gesellschoft m. b. H. Karlsruhe i. B. Fermentation of sugar solutions obtained from cellulose-containing products, *e. g.*, wood.

The fermentation, *e. g.*, of waste sulphite liquor, is carried out with "gefesselter" yeast.

**137.** 1921. D. R. P. 341,857. A/S Sulfitkul, Christiania. Decomposition of waste sulphite liquor by splitting off the chemically bound sulphurous acid at high pressures and temperatures.

The waste liquor is passed continuously through a preheater and then through a decomposing receptacle, from the upper end of which the sulphurous acid liberated in the reaction is liberated, while the decomposed waste liquor and the separated lignin are removed from the lower end. The waste liquor passes automatically through all stages of the operation and passes out in the decomposed condition. The lignin substance which separates is suitable for fuel and for further purification and working up into lignin.

**138.** 1921. D. R. P. 341,972. G. Mohrdieck, Hamburg. Preparation of a binding agent for fuel briquettes from waste sulphite liquor and the residue of tar distillations.

Concentrated waste sulphite liquor is dropped into the molten residue; the mixture is then thoroughly kneaded, during which from one to one and a half parts of waste liquor may be worked into four to five parts of the molten residue. It is advantageous to melt pitch residues with the residues of the tar distillations.

**139.** 1921. U. S. 1,379,175. H. A. Folsom, Providence, R. I. Solvent for dyestuffs.

One may dissolve vat and sulphur dyes by mixing with water, alkalies and waste sulphite liquor.

**140.** 1921. U. S. 1,385,941. Carlton Ellis, Montclair, N. J. Preparation of an oil impermeable tank.

Tanks of cement are coated with an acid solution of waste sulphite liquors.

**141.** 1921. U. S. 1,393,241. P. A. Paulson, Appleton, Wisconsin. Method and apparatus for reclaiming values from waste sulphite liquors.

Waste sulphite liquor is heated to generate steam and drive off sulphur dioxide and also to precipitate lignin and other resinous materials; the steam and sulphur dioxide are used for cooking wood pulp in a digester.

**142.** 1921. U. S. 1,394,151. W. H. Dickerson, Muskegon, Mich. Preparation of a tanning agent from waste sulphite liquor.

The crude liquor, before or after neutralization with alkali, and after removal of the free sulphur dioxide, is treated with hydrogen sulphide until a heavy precipitate of sulphur begins to form. The sulphur is filtered and the filtrate treated with oxalic acid, ammonium sulphate, aluminum sulphate or other sulphates which precipitates the calcium oxide as calcium sulphate. The use

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of lactic acid, acetic acid or other organic acids does not precipitate the calcium but increases the tanning action. If the product is to be used for the bleaching of leather, sodium acid sulphate should be used for the precipitation of the calcium.

**143.** 1921. British 143,874. Canadian 236,126, (1923). W. H. Dickerson, New York. Preparation of solid tanning materials from waste sulphite liquors.

Crude waste sulphite liquor is freed of calcium or magnesium in the usual way and, after partially concentrating, is sprayed by air under pressure into a chamber, where it precipitates on the walls in powder form.

**144.** 1920. British 163,137. O. Silberrad, Essex. Method for the preparation of a fertilizer.

Waste sulphite liquor is mixed with calcium cyanamide, the product pulverized and dried.

**145.** 1921. British 165,788. R. Adler, Carlsbad. Preparation of carbon and charcoal.

Waste sulphite liquors, or the residue from the sulphite alcohol process, is treated for the production of decolorizing carbon by precipitating the organic matter by the addition of neutral salts (such as potassium or sodium chlorides) or alkaline earth hydroxides, separating the precipitate by filtration, adding alkali compounds, such as hydroxides, carbonates, phosphates, sulphates, etc., to convert the organic matter into a soluble form, then carbonizing it and removing the contained alkali salts by water, carbon dioxide being passed into the mixture to convert the sulphides present into carbonates for reuse in the process.

**146.** 1921. Austrian 83,876. Th. Goldschmidt A.-G., Essen-Ruhr. Preparation of sulphite alcohol.

The neutralized and cooled waste sulphite liquor is first subjected to a preliminary fermentation in a separate tank; as soon as the true fermentation begins (so much that about one-third of the sugar present in the waste liquor in the preliminary fermenting bath is fermented, a portion of the liquor is transferred to another tank to complete the fermentation, while a corresponding amount of fresh liquor is added to the preliminary fermenting tank.

**147.** 1921. Austrian 84,286. K. G. Karlsson, Sköfde, Sweden. Preparation of a tanning extract from waste sulphite liquor.

The tanning extract prepared from the waste sulphite liquor in the known ways is mixed with solid soap and simultaneously with one or more acids. Acid should be added in such amounts that none of the fatty acids of the soap precipitate. The extract gives a bright, pliable leather of high tensile strength

**148.** 1921. Austrian 84,896. E. Pollacsek, Florence, Italy. Preparation of a preserving agent for eggs.

Concentrated waste sulphite liquor is mixed with caustic lime and then with an odorless substance of fat-like consistency, such as vaseline, as well as with an antiseptic agent (boric or salicylic acid).

**149.** 1921. French 512,994. B. Grätz. Purification of waste sulphite liquor.

The waste liquor is neutralized by the addition of ashes of coal, wood, etc., freed from lime, clarified and evaporated.

**150.** 1921. French 517,373. Chemische Fabriken Dr. Kurt Albert. Preparation of colloidal metals, metalloids and their compounds.

Metals or their compounds are treated (at temperatures above 100° C.) with waste sulphite liquor until the elements or their compounds separate in colloidal form. Finally a precipitating agent (alkali) is added. There may be thus prepared: Colloidal mercury, copper, cuprous oxide, chromium hydroxide, mercuric oxide, silver. [*Cf.* British 169,758 (June 3, 1920); C. A. 16,792.]

**151.** 1921. French 518,391. U. S. 1,386,521. Max Müller. Preparation of threads, films or plates of viscose.

One may use as a precipitating bath for viscose, mixtures of waste sulphite liquors or the liquors from the sulphite alcohol factories with a mineral acid or their acid salts.

TECHNICAL SECTION, PAGE 180

**152.** 1921. French 519,789. British 145,742 (1920). H. Breuer. Method of preparing leather.

Pelts are subjected to tanning by the black liquor from soda or straw pulp mills. One may use the precipitate, obtained by the addition of heavy metal salts to the liquor, suspended in the original liquor. Ferrim alum gives a yellowish precipitate and this a leather which can scarcely be distinguished from a vegetable tanned product.

**153.** 1921. Swiss 88,570. Aktieselskapet Sulfitsprit, Drammen, Norway. Preliminary treatment of waste sulphite liquor for fermentation.

The liquor is partially concentrated in order to decrease its acid content; the remaining acid is further decreased (until a suitable concentration for fermentation is reached) by the addition of alkali carbonates.

**154.** 1921. Swiss 91,877. Deutsche-Koloniale Gerb- und Farbstoff-Gesellschaft m. b. H. Karlsruhe i. B. Preparation of a tanning agent from waste sulphite liquor.

Sulphite liquor is treated with an alkaline earth compound (calcium oxide or carbonate) and freed from the precipitate. The filtrate is then treated with an alkali compound (sodium carbonate or silicate) which has the property of precipitating the calcium bound to the lignosulphonic acids and again freed from the precipitate. The filtrate is further treated with acids in amounts equivalent to 50 to 100 percent of the alkali used in precipitation (that is, not less than half nor more than that theoretically needed to decompose the alkali lignonsulphonate). The British patent 171,136 (July 7, 1920) by Römer and the above company describes further modifications of the process. [Instead of acid, there may be added salts of metals such as are used in mineral tanning, for instance aluminum, iron or chronium chlorides; the liquids thus obtained can be used directly for tanning. The liquid may be fermented after the addition of the lime or carbonate and may be concentrated by evaporation after treatment with the alkali.]

**155.** 1921/22. Swiss 92,146 and addition patent 92,892. Aktiengesellschaft Kummler und Matter, Aarau, Switzerland. Method of processing waste sulphite liquor.

Before or during the processing of the waste liquors, *e.g.*, during the evaporation to recover alcohol or fuel, an excess of alkali is added. This neutralizes any acid formed during the concentration and prevents corrosion of the metal parts.

**156.** 1922. D. R. P. 347,201. Deutsch-Koloniale Gerb- und Farbstoff-Gesellschaft m. b. H. Karlsruhe i. B. Preparation of tanning agents from waste sulphite liquor.

The neutralized waste liquor (addition of milk of lime or calcium carbonate), from which the alcohol has been removed by fermentation, is electrolyzed.

**157.** 1922. D. R. P. 352,127. R. Adler, Carlsbad. Preparation of a highly active charcoal.

The patent is similar to British 165,788 (No. **145**).

**158.** 1922. D. R. P. 352,138. H. P. Kaufmann, Jena. Preparation of a glue from waste sulphite liquor.

Waste sulphite liquor, in concentrated form or as a dry powder, is mixed with casein and lime or with casein, lime and an alkali salt. According to addition patent 353,570 (1922), there may be used in place of calcium oxide, equivalent amounts of other alkaline earths, magnesium oxide or magnesium hydroxide and, in place of the alkali salts, amonium salts may be used.

(*To Be Continued*)

## Formation of Thomas C. Hanna & Co.

Following many years association with the Philadelphia paper distribution trade, Thomas C. Hanna, formerly local manager of the New York and Pennsylvania Company, has again become actively engaged in the industry as head of his own firm. During the week announcement was made of the formation of Thomas C. Hann & Co., with Mr. Hanna as sole proprietor of the business, to be devoted to the distribution of a complete line of papers.

# Imports of Paper and Paper Stock

## NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

## NEW YORK IMPORTS

WEEK ENDING OCTOBER 24, 1925

### SUMMARY

News print .....148 rolls
Printing paper .....123 cs., 9 bls.
Cigarette paper .....2,114 cs.
Wall paper .....32 bls., 42 cs.
Paper hangings .....67 bls., 2 cs.
Wrapping paper .....8 cs.
Packing paper .....620 bls., 10 cs.
Colored paper .....14 cs.
Kraft paper .....264 rolls
Decalcomania paper .....19 cs.
Surface coated paper .....324 cs.
Basic paper .....51 cs.
Metal paper .....8 cs.
Photo paper .....2 cs.
Writing paper .....3 bls., 4 boxes
Drawing paper .....3 cs.
Copy paper .....7 cs.
Miscellaneous paper .....169 cs., 24 bls.

### CIGARETTE PAPER

American Tobacco Co., Sarcoxie, Bordeaux, 1300 cs.

De Manduit Paper Corp., Sarcoxie, St. Nazaire, 384 cs.

Standard Products Corp., Rochambeau, Havre, 40 cs.

American Tobacco Co., La Bourdonnais, Bordeaux, 300 cs.

Max Spiegel & Son, La Bourdonnais, Bordeaux, 13 cs.

P. J. Schweitzer, Pres. Van Buren, Marseilles, 77 cs.

### WALL PAPER

A. C. Dodman, Jr., Inc., Baltic, Liverpool, 4 bls.

F. J. Emmerich, Baltic, Liverpool, 11 bls.

Baldwin Universal Co., American Farmer, London, 9 bls.

R. F. Downing & Co., Minnetonka, London, 6 bls.

Bendix Paper Co., Deutschland, Hamburg, 40 cs.

W. H. S. Lloyd & Co., Franconia, Liverpool, 2 cs.

W. H. S. Lloyd & Co., Franconia, Liverpool, 2 bls.

### PAPER HANGINGS

A. C. Dodman, Jr., Inc., Baltic, Liverpool, 53 bls.

W. H. S. Lloyd & Co., Minnetonka, London, 14 bls.

W. H. S. Lloyd & Co., Minnetonka, London, 2 cs.

### NEWS PRINT

H. Reeve Angel & Co., Inc., Pr. Roosevelt, Bremen, 148 rolls.

### PRINTING PAPER

P. C. Zuhlke, Zeeland, Antwerp, 74 cs.

Hensel, Bruckman & Lorbacher, Deutschland, Hamburg, 6 cs.

C. Steiner Deutschland, Hamburg, 37 cs.

B. F. Drakenfeld & Co., Franconia, Liverpool, 6 cs.

Perkins, Goodwin & Co., Arabic, Hamburg, 9 bls.

### WRAPPING PAPER

F. L. Kramer & Co., Deutschland, Hamburg, 8 cs.

### PACKING PAPER

J. P. Heffernan Paper Co., Drottningholm, Gothenburg, 527 bls.

National City Bank, American Farmer, London, 93 bls.

Steiner Paper Corp., Tyrifjord, Oslo, 10 cs.

### COLORED PAPER

Catty & Co., Zeeland, Antwerp, 3 cs.

Beaumont & Son, Zeeland, Antwerp, 4 cs.

P. H. Petry & Co., Deutschland, Hamburg, 7 cs.

### KRAFT PAPER

Arkell Safety Bag Co., Drottningholm, Gothenburg, 264 rolls.

### DECALCOMANIA PAPER

L. A. Consmiller, Pr. Roosevelt, Bremen, 10 cs.

C. W. Sellers, Pr. Roosevelt, Bremen, 9 cs.

### SURFACE COATED PAPER

P. C. Zuhlke, Zeeland, Antwerp, 46 cs.

P. Puttman, Zeeland, Antwerp, 50 cs.

Gevaert Co. of America, Zeeland, Antwerp, 77 cs.

Globe Shipping Co., Lutzow, Bremen, 151 cs.

### BASIC PAPER

Globe Shipping Co., Lutzow, Bremen, 1 cs.

Globe Shipping Co., Zeeland, Antwerp, 50 cs.

### METAL PAPER

Hensel, Bruckman & Lorbacher, Deutschland, Hamburg, 8 cs.

### PHOTO PAPER

J. J. Gavin, Baltic, Liverpool, 2 cs.

### WRITING PAPER

J. D. Smith & Co., Baltic, Liverpool, 3 bls.

F. L. Kramer & Co., Minnetonka, London, 4 boxes.

### DRAWING PAPER

Favor, Ruhl & Co., Minnetonka, London, 3 cs.

### COPY PAPER

Steiner Paper Corp., Havre Maru, Kobe, 2 cs.

Whitfield Paper Works, Havre Maru, Kobe, 5 cs.

### PAPER

E. H. Sergeant & Co., Drottningholm, Gothenburg, 2 cs.

C. K. MacAlpine & Co., Drottningholm, Gothenburg, 24 bls.

H. Reeve Angel & Co., Inc., Havre Maru, Yokohoma, 2 cs.

P. Puttman, Rochambeau, Havre, 30 cs.

Japan Paper Co., Rochambeau, Havre, 10 cs.

A. C. Dodman, Jr., Inc., Rochambeau, Havre, 2 cs.

Judson Freight Forwarding Co., Rochambeau, Havre, 8 cs.

C. G. Keferstein, Rochambeau, Havre, 14 cs.

C. H. Boulin, Rochambeau, Havre, 44 cs.

DuPont Cellophane Co., Majestic, Havre, 6 cs.

Japan Paper Co., Colombo, Genoa, 72 cs.

### RAGS, BAGGINGS, ETC.

A. W. Fenton, Inc., City of Eureka, Leghorn, 118 bls. rags.

Atlas Waste Manfg. Co., City of Eureka, Leghorn, 41 bls. thread waste.

Anglo-South American Trust Co., City of Eureka, Leghorn, 139 bls. rags.

E. J. Keller Co., Inc., Sarcoxie, Bordeaux, 59 bls. rags.

Leshner Paperstock Co., Sarcoxie, St. Nazaire, 54 bls. rags.

A. H. Searle, Vasconia, London, 185 bls. rags.

Chase National Bank, Frederick VIII, Copenhagen, 3,018 bls. bagging.

E. J. Keller Co., Inc., Caracoli, Havre, 231 bls. rags.

E. J. Keller Co., Inc., Caracoli, Havre, 30 bls. bagging.

Irving Bank Columbia Trust Co., Pr. Roosevelt, Bremen, 45 bls. waste.

Irving Bank Columbia Trust Co., Pr. Roosevelt, Bremen, 15 bls. rags.

Irving Bank Columbia Trust Co., Pr. Roosevelt, Bremen, 17 bls. bagging.

The Stone Bros. Co., Inc., Pr. Roosevelt, Bremen, 62 bls. rags.

Anglo-South American Trust Co., Pr. Roosevelt, Bremen, 34 bls. rags.

E. J. Keller Co., Inc., Pr. Roosevelt, Bremen, 78 bls. rags.

Brown Bros. & Co., Pr. Roosevelt, Bremen, 119 bls. rags.

Castle & Overton, Inc., Hellen, Barcelona, 178 bls. bagging.

Irving Bank Columbia Trust Co., Hellen, Barcelona, 156 bls. dark cottons.

New York Trust Co., Hellen, Barcelona, 49 bls. bagging.

A. W. Fenton, Inc., American Farmer, London, 114 bls. rags.

The Stone Bros. Co., Inc., Minnetonka, London, 27 bls. rags.

Castle & Overton, Inc., Chifuku Maru, Hamburg, 51 bls. rags.

Mechanics & Metals National Bank, Chifuku Maru, Hamburg, 114 bls. rags.

S. Birkenstein & Sons, Chifuku Maru, Hamburg, 114 bls. rags.

A. W. Fenton, Inc., Chifuku Maru, Hamburg, 56 bls. rags.

Amsinck, Sonne & Co., Inc., Lancastria, London, 24 bls. rags.

E. J. Keller Co., Inc., Rochambeau, Havre, 74 bls. bagging.

National City Bank, Rochambeau, Havre, 139 bls. rags.

E. J. Keller Co., Inc., Deutschland, Hamburg, 71 bls. rags.

E. J. Keller Co., Inc., Deutschland, Hamburg, 139 bls. bagging.

A. W. Fenton, Inc., Deutschland, Hamburg, 109 bls. rags.

Anglo-South American Trust Co., Deutschland, Hamburg, 114 bls. card waste.

Anglo-South American Trust Co., Troubadour, Buenos Aires, 35 bls. rags.

The Stone Bros. Co., Inc., V. Emmanuele III, Dublin, 171 bls. rags.

The Stone Bros. Co., Inc., Franconia, Liverpool, 36 bls. rags.

E. J. Keller Co., Inc., Arabic, Copenhagen, 32 bls. bagging.

National City Bank, Lutzow, Bremen, 27 bls. jute croppings.

National City Bank, Lutzow, Bremen, 76 bls. card waste.

S. Green, Cayo Mambi, Santiago, 9 bls. rags.

Mechanics & Metals National Bank, La Bourdonnais, Bordeaux, 65 bls. rags.

R. F. Downing & Co., Archimedes, Manchester, 32 bls. rags.

E. Butterworth & Co., Inc., Archimedes, Manchester, 101 bls. bagging.

J. Cohen Son & Co., Inc., Archimedes, Manchester, 24 bls. new cuttings.

E. J. Keller Co., Inc., Londonier, Antwerp, 61 bls. linens.

Castle & Overton, Inc., Eastern Dawn, Antwerp, 47 bls. rags.

OLD ROPE

Brown Bros. & Co., Idaho, Hull, 126 coils.

W. Schall & Co., Idaho, Hull, 109 coils.

Irving Bank Columbia Trust Co., Pr. Roosevelt, Bremen, 20 coils.

Darden Beller Co., Siboney, Havana, 21 bales.

Irving Bank Columbia Trust Co., Arabic, Hamburg, 37 coils.

Brown Bros. & Co., Drottningholm, Gothenburg, 49 coils.

Brown Bros. & Co., Boston City, Bristol, 63 coils.

Brown Bros. & Co., Londonier, Antwerp, 90 coils.

MANILA ROPE

Ellermans' Wilson Line, Majestic, London, 132 coils.

New York Cordage Co., Londonier, Antwerp, 182 coils.

MANILA ROPE YARN

Manufacturers Trust Co., Pres. Van Buren, Manila, 275 pgs.

HEMP ROPE

National City Bank, Franconia, Liverpool, 17 pcs.

CHINA CLAY

Central Union Trust Co., Boston City, Bristol, 136 casks.

C. B. Richard & Co., Boston City, Bristol, 50 casks.

CASEIN

T. M. Duche & Sons, Troubadour, Buenos Aires, 1,334 bags, 80,040 kilos.

A. Klipstein & Co., Inc., La Bourdonnais, Bordeaux, 67 bags.

WOOD PULP

Buck, Kiaer & Co., Fred. VIII, Copenhagen, 600 bls., 100 tons, unbleached sulphite pulp.

Johanson, Wales & Sparre, Inc., Pr. Roosevelt, Bremen, 1750 bls. wood pulp, 355 tons.

Johanson, Wales & Sparre, Inc., Drottningholm, Gothenburg, 457 bls. sulphite pulp.

Scandinavian Pulp Agency, Inc., Drottningholm, Gothenburg, 508 bls. kraft pulp.

E. M. Sergeant & Co., Drottningholm, Gothenburg, 1,554 bls. dry soda pulp.

Tidewater Papermills Co., Bornholm, Sheet Harbor, N. S., 11,697 bls. ground pulp.

R. F. Hammond, Inc., Tydifjord, Oslo, 250 bls. sulphite pulp.

J. Anderson & Co., Tyrifjord, Greaker, 1,500 bls. sulphite pulp.

J. Anderson & Co., Tyrifjord, Sarpsborg, 3,840 bls. sulphite pulp.

Bulkley, Dunton & Co., Carlsholm, Sundsvall, 1,000 bls. chemical pulp.

Scandinavian Pulp Agency, Inc., Carlsholm, Sundsvall, 508 bls. kraft pulp.

Scandinavian Pulp Agency, Inc., Carlsholm, Sundsvall, 3,125 bls. sulphate pulp.

Scandinavian Pulp Agency, Inc., Carlsholm, Sundsvall, 250 bls. sulphite pulp.

Castle & Overton, Inc., Carlsholm, Sundsvall, 203 bls. sulphite pulp.

Johanson, Wales & Sparre, Inc., Carlsholm, Sundsvall, 1,600 bls. sulphite pulp.

Price & Pierce, Ltd., Carlsholm, Sundsvall, 1,200 rolls wet pulp.

Bulkley, Dunton & Co., Sangstad, 2,750 bls. wood pulp.

Bulkley, Dunton & Co., Korsholm, 500 bls. wood pulp.

Buck, Kiaer & Co., Tyrifjord, Oslo, 125 bls., 50 tons, unbleached sulphite pulp.

WOOD FLOUR

B. L. Soberski, Fred. VIII, Oslo, 300 bags.

Composition Materials Co., Drottningholm, Gothenburg, 782 bags.

The Burnet Co., Drottningholm, Gothenburg, 235 bags.

## PHILADELPHIA IMPORTS

WEEK ENDING OCTOBER 24, 1925

H. Bayersdorfer Co., Chifuku Maru, Hamburg, 1 case crepe paper.

S. S. Pennock Co., Chifuku Maru, Hamburg, 36 cs. crepe paper.

Paper Service Co., Chifuku Maru, Hamburg, 3 cs. paper.

Dee Paper Co., Carlsholm, Gothenburg, 58 rolls paper.

The Borregaard Co., Carlsholm, Gothenburg, 22 bls. paper.

Quaker City Paper Co., Carlsholm, Gothenburg, 89 rolls paper.

Wilkinson Bros. & Co., Inc., Carlsholm, Gothenburg, 6 bls. paper.

J. M. Hagy Waste Works, Caracoli, Havre, 10 bls. waste.

S. E. Ingles Co., Chifuku Maru, Hamburg, 125 bls. rags.

Castle & Overton, Inc., Chifuku Maru, Hamburg, 434 bls. rags.

Union National Bank, Chifuku Maru, Hamburg, 120 bls. rags.

Baltimore Trust Co., Chifuku Maru, Hamburg, 487 bls. rags.

R. Blank, Chifuku Maru, Hamburg, 213 bls. rags.

Brown Bros. & Co., Chifuku Maru, Hamburg, 47 bls. rags.

Philadelphia National Bank Chifuku Maru, Hamburg, 80 bls. rags.

L. H. Abenheimer, Chifuku Maru, Hamburg, 46 bls. rags.

E. J. Keller Co., Inc., Chifuku Maru, Hamburg, 595 bls. rags.

S. Birkenstein Sons, Chifuku Maru, Hamburg, 31 bls. rags.

E. J. Keller Co., Inc., Virginian Kobe, 320 bls. rags.

E. J. Keller Co., Inc., Bankdale, Marseilles, 252 bls. rags.

E. J. Keller Co., Inc., Bankdale, Barcelona, 200 bls. rags.

Castle & Overton, Inc., Liberty, Dunkirk, 110 bls. rags.

Castle & Overton, Inc., Eastern Dawn, Rotterdam, 54 bls. rags.

Castle & Overton, Inc., Binnendyk, Rotterdam, 73 bls. rags.

Castle & Overton, Inc., Vellavia, London, 58 bls. rags.

Castle & Overton, Inc., ———, Copenhagen, 253 bls. rags.

Castle & Overton, Inc., ———, Hamburg, 104 bls. rags.

Castle & Overton, Inc., ———, Hamburg, 1,100 bls. wood pulp.

Castle & Overton, Inc., Carlsholm, Sundsvall, 203 bls. wood pulp.

Johanson, Wales & Sparre, Inc., Carlsholm, Sundsvall, 900 bls. sulphite pulp.

Price & Pierce, Ltd., Carlsholm, Sundsvall, 500 bls. chemical pulp.

Price & Pierce, Ltd., Carlsholm, Sundsvall, 1,200 bls. sulphite pulp.

Scandinavian Pulp Agency, Inc., Carlsholm, Sundsvall, 381 bls. kraft pulp.

## BOSTON IMPORTS

WEEK ENDING OCTOBER 24, 1925

Johanson, Wales & Sparre, Inc., West Gotomska, Frano, 3,240 bls. kraft pulp.

Johanson, Wales & Sparre, Inc., Malmen, Gothenburg, 246 bls. kraft pulp.

Johanson, Wales & Sparre, Inc., Malmen, Gothenburg, 175 bls. sulphite pulp.

Pagel, Horton & Co., Inc., West Gotomska, Domsjo, 3,000 bls. sulphite pulp, 500 tons.

Brown Bros. & Co., West Gotomska, Norrsundet, 750 bls. sulphite pulp, 150 tons.

Bulkley, Dunton & Co., Korsholm, 3,250 bls. wood pulp.

Bulkley, Dunton & Co., Halse, 891 bls. wood pulp.

## PORTLAND, ME. IMPORTS

WEEK ENDING OCTOBER 24, 1925

Bulkley, Dunton & Co., Malmen, 5,000 bls. wood pulp.

## BALTIMORE IMPORTS

WEEK ENDING OCTOBER 24, 1925

Baxter Paper Co., Carlsholm, Gothenburg, 203 rolls paper.

Baxter Paper Co., Carlsholm, Gothenburg, 18 bls. paper.

Johanson, Wales & Sparre, Inc., Carlsholm, Gothenburg, 3,017 bls. kraft pulp.

Johanson, Wales & Sparre, Inc., Carlsholm, Gothenburg, 2,350 bls. sulphite pulp.

Scandinavian Pulp Agency, Inc., Carlsholm, Gothenburg, 1,041 bls. sulphite pulp.

Parsons & Whittemore, Inc., Carlsholm, Gothenburg, 122 bls. sulphite pulp.

E. M. Sergeant & Co., Carlsholm, Gothenburg, 418 bls. dry soda pulp.

Bulkley, Dunton & Co., Carlsholm, Svartvik, 250 bls. chemical pulp.

M. Gottesman & Co., Inc., Carlsholm, Sundsvall, 3,000 bls. sulphite pulp.

Price & Pierce, Ltd., Carlsholm, Sundsvall, 900 bls. suplhite pulp.

Scandinavian Pulp Agency, Inc., Carlsholm, Sundsvall, 250 bls. sulphate pulp.

Castle & Overton, Inc., ———, Germany, 1,380 bls. wood pulp.

W. Hartman & Co., Inc., Chifuku Maru, Hamburg, 675 bls. wood pulp, 104 tons.

M. Gottesman & Co., Inc., Chifuku Maru, Hamburg, 2,400 bls. wood pulp, 370 tons.

National City Bank, Chifuku Maru, Hamburg, 860 bls. chemical pulp, 120 tons.

H. F. Watson & Co., V. Emmanuele III, Dublin, 100 bls. rags.

Bulkley, Dunton & Co., Sangstad, 2,750 bls. wood pulp.

Buck, Kiaer & Co., Mexicano, Oslo, 250 bls., 50 tons, unbleached sulphite pulp.

Buck, Kiaer & Co., Mexicano, Oslo, 400 bls., 50 tons, sulphate pulp.

## NEW ORLEANS IMPORTS

WEEK ENDING OCTOBER 24, 1925

Castle & Overton, Inc., Emergency Aid, Germany, 38 bls. rags.

Castle & Overton, Inc., Meanticut, Havre, 573 bls. rags.

Castle & Overton, Inc., Meanticut, Havre, 97 bls. paper stock.

Castle & Overton, Inc., Bayou Chico, Rotterdam, 39 bls. rags.

E. J. Keller Co., Inc., Bayou Chico, Rotterdam, 64 bls. bagging.

### Beveridge Paper Co. Sends Out Folder

INDIANAPOLIS, Ind., October 19, 1925.—The Beveridge Paper Company is sending out a folder containing complete samples of 3, 4, 5, 6, 8 and 10 ply Mill Blanks. This folder contains complete information as to how the stock is packed, the prices f.o.b. mill and warehouses in the following cities: Baltimore, Boston, Cincinnati and New York. On the 3 ply sample there is printed a half tone using a 120 line screen, which shows the possibility for work of this kind on the suede finish in which the Beveridge Mill Blanks are now made.

### Wm. Dalrymple Goes With American Writing

HOLYOKE, Mass., October 26, 1925.—William Dalrymple has resigned his position as night superintendent of the Valley Paper Company and has accepted a position with the American Writing Paper Company.

## New York Market Review

Office of THE PAPER TRADE JOURNAL,
Wednesday, October 28, 1925.

Business in the local paper trade continues to expand and the tone of the market is stronger than for some time. Influenced by the approach of the holiday season, the demand for the various grades of paper is unusually heavy, and a good volume of inquiries are also being received by the manufacturers, for future business. Prices of practically all grades are being well maintained and the general outlook is regarded as highly promising. The sales organizations of the leading paper houses are exceptionally active and all hands are looking forward to accomplishing a fine record before the close of the year.

News print continues in great demand, and spot trading, in particular, is very active. Stocks on hand are reported to be much lower than usual at this time of the year and, as a result, prices are very firm. Consumption of news print continues to expand. According to R. S. Kellogg, secretary of the News Print Service Bureau, publishers used 15,000 tons more in August, 1925, than in August, 1924, and 20,000 tons more than in August, 1923. Newspaper advertising for the first nine months of the current year shows an increase of 3 per cent over 1924 and periodical advertising for the first ten months of 1925 shows an increase of 2 per cent over the corresponding period last year.

Orders for box board are growing in volume and the demand for spot supplies continues exceptionally strong. Further gains are confidently anticipated before the end of the year. Fine papers are also in great request and innumerable orders are coming in from the printers. Coarse papers also share in the general improvement which, is expected to continue until some time after the close of the holiday season.

### Mechanical Pulp

Trading in the ground wood market continues to expand in a satisfactory manner. The demand for spot supplies is particularly strong and a good volume of contract business is also reported to have been closed during the past week. Mechanical pulp continues to move very freely into the consuming channels and, as stocks are diminishing, the market is inclined to rise.

### Chemical Pulp

Chemical wood pulp continues to be in heavy demand and many buyers are said to be purchasing at a considerable period ahead in anticipation of higher prices. Both imported and domestic sulphite are in great request and slight advances in these commodities have been recorded during the past week. The freezing of the Baltic and the cessation of shipments from Sweden are factors which will affect the market in the near future.

### Old Rope and Bagging

A satisfactory demand for old rope is being experienced and orders received by the dealers are said to be quite sufficient to take care of the supplies now in the market. Domestic and foreign bagging is moving steadily, the mill demand continuing to be for the same grades as formerly. Prices have advanced materially during the past two weeks, and the tone of the market is very firm.

### Rags

There has been a slight improvement in the demand for domestic rags, but prices remain practically unchanged. The amount of stock offered is rather restricted at the present time. There is also a scarcity of foreign rags, especially the better grades, which condition is attributed to increased consumption by the European mills. Prices are well maintained and, in some quarters, higher levels are looked for in the near future.

### Waste Paper

The mill demand for waste paper has slightly improved and there is a lively inquiry for low grades, in particular. The improved condition of the waste paper trade is reflected by the continued strength of the chemical and mechanical pulp markets. Old kraft paper continues to be the bright feature of the waste paper industry and the price of this commodity is well maintained.

### Twine

With the busy shopping season at hand, the demand for twine continues to be strong. Prices are holding up well at the recently quoted basis. The continued expansion of the twine market is confidently anticipated by most dealers and the outlook for the future is very bright.

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## Swedish Pulp Market Has Been Active

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., October 28, 1925.—A report from Consul General C. I. Dawson, Stockholm, stated that the Swedish pulp market was unusually active up to the middle of September. Sales of chemical pulp during August are reported at 190,000 tons for sulphite, 75,000 tons for sulphate, and 20,000 to 22,000 tons for mechanical groundwood. In view of the brisk demand sulphite prices have shown considerable firmness and mechanical pulp prices are better. A slight weakness was noticeable in the sulphate market. Unofficial statistics indicate that shipments of wood pulp to the United States during the first seven months of 1925 have totaled 211,239 tons in comparison with 183,463 tons during the same period in 1924. A marked increase was also noticeable in shipments to Germany and Japan, which amounted to 28,811 tons and 12,066 tons respectively as against 1,347 tons and 6,028 tons during the first seven of last year. Shipments to the United Kingdom, however, show a decrease from 183,463 tons to 170,080 tons during the same period.

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## MacKay Wire Works Start New Loom

[FROM OUR REGULAR CORRESPONDENT]

KALAMAZOO, Mich., October 28, 1925.—The MacKay Wire Works, North Church street, has completed the installation of its third loom and has started production on it this week. This unit can weave a Fourdrinier wire screen 172 inches in width and is capable of taking care of the needs of the largest machines in the valley.

Malcolm J. MacKay, proprietor, reports a steady increase in business. He is at present running one loom 24 hours daily and at the starting of the latest unit will have plenty of orders to insure steady operation.

He is planning to take over additional space in the structure now under lease.

# Miscellaneous Markets

Office of THE PAPER TRADE JOURNAL,
Wednesday, October 28, 1925.

Trading in the chemical market is still proceeding at a satisfactory pace and the improvement which set in at the beginning of September shows no signs of falling off. In practically all sections of the trade the general tone is remarkably sound and prices on most materials remain very firm. The producers are also receiving a good volume of inquiries for future business. Contract withdrawals are being well maintained, while deliveries are increasing in a satisfactory manner. With the exception of bleaching powder and chlorine, on which contract prices for the forthcoming year were announced earlier in the month, the manufacturers have not yet announced their scale of chemical material prices for 1926, but the announcements are expected to be made before much longer. Prominent members of the chemical industry express the opinion that there will be no radical changes in the revised scale of prices.

BLANC FIXE.—Although inquiries for prompt shipment are increasing somewhat, the demand for blanc fixe is rather quiet at present. However, it is reported that purchaser's stocks are low and that many buyers will soon be forced to replenish their supplies. Prices still remain firm and are shaded only in rare instances when there is some particular reason for doing so. The pulp is quoted at from $60 to $70 a ton, and the powder at from $75 to $90 a ton.

BLEACHING POWDER.—The bleaching powder situation is stronger than for some time and the manufacturers are optimistic regarding the future. The new contract prices announced last week were made necessary through the higher costs of production and increased consumption. It is said that further advances are possible. The quoted price is from $2.00 to $2.40 per 100 pounds, in large drums, at works.

CAUSTIC SODA.—A steadily increased demand is being experienced for caustic soda. Contract shipments have been heavy, while accumulations are reported to be below normal. Manufacturers are working at practically full capacity to take care of the rush of orders. Quoted prices remain firm at from $3.10 to $3.15 per 100 pounds, at works.

CASEIN.—No important developments have been reported in the casein market and the demand is just about normal for this time of the year. Domestic casein is quoted at from 13 to 15 cents a pound, and foreign at from 13.50 to 14.75 cents a pound.

CHINA CLAY.—Although little spot trading has been transacted during the past week both domestic and imported grades are moving well against contract. Prices are practically unchanged and the same basis is expected to prevail for quite a considerable period of time. Imported grades are quoted at from $14.50 to $22.50 a ton, and the domestic grades at from $12 to $15 a ton.

CHLORINE.—An improvement has been noticed in the demand for chlorine and shipments on contract are steadily increasing. The price of chlorine rules steady at 4 cents a pound in tanks or multi-unit cars, at works, on contract, and 4½ cents a pound, on spot orders.

ROSIN.—The rosin market is still inclined to fluctuate and it is hard to predict the future tendency of this product. The movement of supplies into consuming channels has improved slightly, although there is very little new business around. At the naval stores rosin is at present quoted at from $15.60 to $15.80 ship side, in barrels of 280 pounds.

SALT CAKE.—Spot demand for salt cake has been quite active during the past week and prices have been well maintained. A great expansion of business in the salt cake market is predicted for the near future, following the expected announcements by the manufacturers of the new contract prices, which may be given out at any moment from now. The quoted price of salt cake is still from $16 to $20 a ton, in bulk, at works.

SODA ASH.—An improved demand for soda ash has been experienced during the last week. The market continues firm and withdrawals on contracts are reported to be very heavy. There are practically no surplus accumulations and plants are said to be working overtime to meet the increased demand. Soda ash is still quoted at from 1.38 to 1.63 cents a pound, in bulk, at works.

STARCH.—There is a good seasonal demand for starch and a satisfactory volume of inquiries are in the market for future orders. Leading refiners have recently made concessions to their customers, due to the recent reactions in the grain market. Special paper makers starch is now quoted at $3.22 per 100 pounds, in bags, and $3.39, in barrels.

SULPHATE OF ALUMINA.—Although the demand for sulphate of alumina is fairly normal a broader demand is expected to develop very shortly from the paper industry. The prices continue unchanged, commercial grades being quoted at from $1.40 to $1.50 per 100 pounds, in bags, at works, and iron free at from $2 to $2.35.

SULPHUR.—The sulphur market continues active and steady and shipments have materially increased of late. The demand for spot business has been satisfactory and a fair volume of contract business has also been transacted. The price is still quoted at from $19 to $20 a ton, in bulk, ship side, and from $15 to $16 a ton, at mine.

TALC.—The talc market pursues the even tenor of its way. The stocks available are quite sufficient to take care of the prevailing demand and prices remain firm at from $17 to $18 a ton, according to the grade.

## ALLOT NEW PULP WOOD LIMITS

(*Continued from page 76*)

F. Smith, of Smith, Davidson and Wright, paper jobbers, Vancouver, who has been spending some time in the east, was a caller on the Toronto trade last week.

George R. Gray, president of the Fort William Paper Company, Fort William, was in Toronto last week on business.

The residents of Thorold, Ont., will shortly vote upon a bye-law to grant a fixed assessment for a term of years to the Davy Pulp and Paper Company and at the same time will render a decision for the continuance of an agreement covering fixed assessment with the Thorold Pulp and Paper Company.

E. H. Schofield, of the Schofield Paper Company, St. John, N. B., who is the newly elected president of the Canadian Paper Trade Association, was in Toronto last week, visiting a number of friends in the industry.

The Canadian Barking Drum Company, Toronto, and the American Barking Drum Company, have received contracts for installing new barking drums in the plants of the Oji Paper Manufacturing Company, Tokio, Japan; the Daily News Paper Corporation, North Tonawanda, N. Y.; Oregon Pulp and Paper Company, Salem, Oregon; Calcasieu Sulphate Paper Company, Louisiana, and Port Alfred Pulp and Paper Corporation, Port Alfred, Quebec.

The amount of pulp wood which will be taken out this season in Northern Ontario, will likely be larger than at first anticipated, according to the number of men being engaged by the various employment agencies to go into the bush. There is an abundant supply of labor and the market outlook is looking somewhat brighter in view of improving business conditions.

### St. Louis Salesmen and Jobbers To Meet

ST. LOUIS, Mo., October 26, 1925.—In an effort to find out just what is the matter with business the paper jobbers and salesmen of the St. Louis district will hold a meeting some time in November at which the salesmen will have charge and the executives be merely listeners. The salesmen are expected to tell the jobbers of conditions in the field and suggest remedies. It is hoped the meeting will develop some metnod of getting larger orders without decreasing the number.

# Market Quotations

Quoted by Hepburn & Co., No. 74 Broadway, N. Y. City, to whom all inquiry for quotations on these or any other Securities is referred.

| BONDS | BID | OFFERED |
|---|---|---|
| Abitibi Power and Paper, Gen. 6s 1940 | 101 | 103* |
| Advance Bag and Paper, 7s 1943 | 98 | 100* |
| Bastrop Pulp and Paper, 7½s 1932 | 104 | 108* |
| Brompton Pulp and Paper, 6s 1927 | 94 | 96 |
| Beaver Board, 8s 1933 | 92 | 94 |
| Bedford Pulp and Paper, 6½s 1942 | 98 | ... |
| Berkshire Hills Paper Co., 8s 1941 | ... | 80 |
| Beaver Products Corp., 7½s 1942 | 104 | 106 |
| Belgo Canadian Paper, 6s 1943 | 101 | 103 |
| Brown Paper Co., 8s 1931 | 102 | ... |
| Berlin Mills, 5s 1931 | 98 | ... |
| Bryant Paper Co., 6s 1942 | 99 | 102* |
| Brown Company Serial, 6s 1925-43 | 97 | 100 |
| Central Paper 6½s 1925-42 | 91 | 94 |
| Cape Breton Pulp and Paper, 6s 1932 | 100 | ... |
| Carthage Sulphite Pulp and Paper, 8s 1941 | 40 | 50 |
| Champion Coated Paper Co., 6s 1924-34 | ... | 102 |
| Champion Fibre Co. Notes, 8s 1930 | 101 | ... |
| Cherry River Paper, 5s 1929 | 98 | 100* |
| Donnaconna Paper Co., Ltd., 6s 1940 | 99 | 101 |
| Eddy Paper, 7½s 1931 | 100 | ... |
| Eagle Paper, 6½s 1932 | 96 | 100 |
| Escanaba Paper, 6s 1933 | 87 | 95* |
| Fox River Paper, 7s 1931 | 100 | ... |
| Fort Orange Paper Co., 7s 1942 | 95 | 99 |
| Gilbert Paper Co., 7s 1927 | 96 | ... |
| Gilbert Paper Co., 6½s 1923-29 | 101 | 102* |
| Hammermill Paper Co., 6s 1930-39 | 99 | ... |
| Hercules Corp'n, 8s 1936 | 100 | ... |
| Hummell, Ross Fibre Corp., 7s 1925 | 90 | ... |
| Jessup & Moore Paper Co., 6s 1939 | 97 | ... |
| Kenmore Pulp and Paper Co., 6s 1937 | 90 | ... |
| Lake Superior Pulp and Paper, 6s 1941 | 105 | ... |
| Mattagami Pulp and Paper, 6s 1937 | 90 | ... |
| Marinette & Menominee, 7½s 1936 | 104 | ... |
| National Paper and Type, 6s 1947 | 96 | 99* |
| Oswego Falls Corp., 8s 1942 | 102 | 105 |
| Orono Pulp and Paper, 5s 1941 | 93 | 96* |
| Ormsa Pulp and Paper, 6s 1943 | 97 | 100* |
| Oxford Paper Co., 6s 1947 | 101 | ... |
| Paterson Parchment Paper, 5½s 1927-28 | 98 | 100 |
| Paterson Parchment, 6s 1938 | 98 | 100* |
| Parker Young Co., 6½s 1944 | 92 | 96 |
| Price Bros. & Co., Ltd., 6s 1943 | 98 | 101 |
| Provincial Paper Mills, Ltd., 6s 1940 | 97 | ... |
| Riordon Co., Series A, 8s 1940 | 115 | 118 |
| Riordan Paper, 6s 1924 | 99 | 101 |
| Riordan Pulp and Paper, Ltd., 6s, 1929 | 33 | 35 |
| River Raisin Paper, 8s 1936 | 104 | 106 |
| St. Maurice Paper Co., Ltd., 5½s, 1929 | 98½ | 99¾ |
| St. Regis Paper, 6½s, 1929-35 | 97 | 102 |
| Smith (Howard) Paper Mills, 7s 1941 | 96 | 99 |
| Smith (Howard) Paper Mills, 6s 1934 | 98 | ... |
| St. Croix Paper, 5s 1923-37 | 95 | ... |
| Stevens & Thomson Paper, 6s 1942 | 86 | 90 |
| Spanish River Pulp and Paper, 6s 1931 | 105 | 108 |
| Spanish River Pulp and Paper, Gen 8s 1941 | 106 | 109 |
| Ticonderoga Pulp and Paper Co., 6s, 1940 | 91 | 95 |
| Ticonderoga Pulp & Paper 1-5, 1930 | 88 | 93 |
| S. D. Warren Company, 6s, 1945 | 97 | 100 |
| Whittaker Paper, 1st 7s 1942 | 98 | ... |
| Watab Paper Co., 6½s 1942 | 100 | 104 |
| Waterway Paper Products, 7s 1924-27 | 95 | 100 |
| Wayagamack Pulp and Paper, Ltd., 6s 1951 | 88 | 90 |

| STOCKS | BID | ASKED |
|---|---|---|
| Abitibi Power and Paper, Com | 67 | 70 |
| Abitibi Power and Paper, Pfd | 103 | ... |
| Advance Bag and Paper, Com | 8 | 12* |
| Advance Bag and Paper, Pfd | 77 | ... |
| Beaver Board, Com | 4 | 6 |
| Beaver Board, Pfd | 32 | 35 |
| Bryant Paper, Cap | 12 | ... |
| Bryant Paper, Pfd | 9 | ... |
| Chicago Mill & Lumber Co., Com | 63 | ... |
| Chicago Mill & Lumber Co., Pfd | 98 | 104 |
| Crown Williamette, Com | 93 | 98* |
| Crown Williamette, 7% A, Pfd | 98 | SW |
| Donnaconna Paper, Com | 49 | 54 |
| Donnaconna Paper, Pfd | 95 | 100 |
| Great Northern Paper, Cap | 260 | 270 |
| Jessup & Moore Paper, Pfd | 80 | ... |
| International Paper Co., Com | 63 | 65 |
| International Paper Co., Pfd. 6% | 75 | 80 |
| Mengel Company, Com | 60 | 65 |
| Mengel Company, Pfd | 83 | 93 |
| Oxford Papers, Com | 102 | ... |
| Oxford Paper Co., Pfd | 100 | ... |
| Provincial Paper Co., Com | 94 | 98 |
| Provincial Paper Co., Pfd | 99 | ... |
| Price Brothers, Cap | 47 | 50 |
| St. Croix Paper | 185 | 215 |
| St. Maurice Paper Co., Cap | 83 | 85 |
| St. Regis Paper Co., Cap | 54 | 56 |
| Spanish River Pulp and Paper, Com | 97 | 101 |
| Spanish River Pulp and Paper, Pfd | 109 | ... |
| Ticonderoga Pulp and Paper, Cap | 145 | ... |
| West Virginia Pulp and Paper, Cap | ... | 47 |
| West Virginia Pulp and Paper, Pfd | 95 | 105 |
| Whittaker Paper, Com | 50 | ... |
| Whittaker Paper, Pfd | 60 | 70 |

* Nominal

## Paper

(F. o. b. Mill)

| | | |
|---|---|---|
| Ledgers | 11.00 | @38.00 |
| Bonds | 9.00 | @45.00 |
| Writings— | | |
| Extra Superfine | 14.00 | @32.00 |
| Superfine | 14.00 | @32.00 |
| Tub Sized | 10.00 | @15.00 |
| Engine Sized | 8.00 | @11.00 |
| News— | | |
| Rolls, contract | 3.50 | @ 3.90 |
| Rolls, contract, '26 | 3.25 | @ 3.65 |
| Rolls, transit | 3.75 | @ 4.25 |
| Sheets | 4.00 | @ 4.25 |
| Side Runs | 3.25 | @ 4.00 |
| Book, Cased— | | |
| S. & S. C. | 7.00 | @ 9.75 |
| M. F. | 6.25 | @ 8.75 |
| Coated and Enamel | 8.00 | @15.00 |
| Lithograph | 8.00 | @15.00 |
| Tissues—Per Ream : | | |
| White No. 1 | .70 | @ .90 |
| Anti-Tarnish | 1.10 | @ 1.90 |
| Colored | 1.00 | @ 2.00 |
| White No. 2 | .65 | @ .75 |
| Kraft | .85 | @ .95 |
| Manila | .70 | @ .80 |
| Kraft— | | |
| No. 1 Domestic | 5.75 | @ 6.25 |
| No. 2 Domestic | 5.10 | @ 5.50 |
| Southern | 4.75 | @ 5.00 |
| Imported | 5.50 | @ 5.75 |
| Manila— | | |
| No. 1 Jute | 9.00 | @ 9.25 |
| No. 2 Jute | 7.75 | @ 8.50 |
| No. 1 Wood | 4.75 | @ 5.25 |
| No. 2 Wood | 4.00 | @ 4.50 |
| Butchers | 3.75 | @ 4.25 |
| Fibre Papers— | | |
| No. 1 Fibre | 4.50 | @ 5.00 |
| No. 2 Fibre | 4.25 | @ 4.75 |
| Common Bogus | 2.50 | @ 2.75 |
| S. Screening | 3.00 | @ 3.50 |
| Card Middles | 4.00 | @ 5.00 |
| Boards—per ton— | | |
| News | 45.00 | @47.50 |
| Straw | 57.00 | @60.00 |
| Chip | 42.00 | @45.00 |
| Binders' Boards | 72.50 | @77.50 |
| Sgl. Mla. Ll. Chip | 58.00 | @60.00 |
| Wood Pulp | 70.00 | @75.00 |
| Container | 62.50 | @67.50 |
| Sulphate Screenings— | | |
| Coarse | .75 | @ .85 |
| Refined | 1.75 | @ 2.00 |
| Ground Wood— | | |
| Screenings | 20.00 | @25.00 |
| Glassine— | | |
| Bleached, basis 25 lbs. | 13.00 | @16.00 |
| Bleached, basis 20 lbs. | 15.00 | @16.00 |

## Mechanical Pulp

(Ex-Dock)

| | | |
|---|---|---|
| No. 1 Imported— | | |
| Moist | 35.00 | @40.00 |
| Dry | 38.00 | @42.00 |
| (F. o. b. Mill) | | |
| No. 1 Domestic | 28.00 | @32.00 |

## Chemical Pulp

(Ex-Dock, Atlantic Ports)

| | | |
|---|---|---|
| Sulphite (Imported)— | | |
| Bleached | 4.00 | @ 4.50 |
| Easy Bleaching | 3.25 | @ 3.60 |
| No. 1 strong unbleached | 2.95 | @ 3.25 |
| No. 2 strong unbleached | 2.80 | @ 2.95 |
| No. 1 Kraft | 3.00 | @ 3.25 |
| Sulphate— | | |
| Bleached | 3.75 | @ 4.00 |
| (F. o. b. Pulp Mill) | | |
| Sulphite (Domestic)— | | |
| Bleached | 4.00 | @ 4.75 |
| Easy Bleaching Sulphite | 3.00 | @ 3.25 |
| News Sulphite | 2.65 | @ 2.80 |
| Mitscherlich | 3.25 | @ 3.75 |
| Kraft (Domestic) | 3.00 | @ 3.50 |
| Soda Bleached | 4.00 | @ 4.25 |

## Domestic Rags

New Rags

Prices to Mill f. o. b. N. Y.

| | | |
|---|---|---|
| Shirt Cuttings— | | |
| New White, No. 1 | 14.25 | @15.00 |
| New White, No. 2 | 8.00 | @10.00 |
| Silesias No. 1 | 10.50 | @11.50 |
| New Unbleached | 14.00 | @15.00 |
| Washables | 6.50 | @ 9.25 |
| Fancy | 9.75 | @10.25 |
| Blue Overall | 11.50 | @11.75 |
| New Blue Prints | 7.50 | @ 8.50 |
| New Soft Blacks | 5.75 | @ 6.20 |
| Mixed Khaki Cuttings | 7.00 | @ 8.00 |
| Pink Corset Cuttings | 10.25 | @10.75 |
| Pink Muslin | 10.00 | @10.50 |
| New Light Seconds | 3.25 | @ 3.50 |
| O. D. Khaki Cuttings | 7.00 | @ 8.00 |
| Men's Corduroy | 6.25 | @ 6.75 |
| New Mixed Blacks | 4.00 | @ 4.50 |

Old Rags

| | | |
|---|---|---|
| White, No. 1— | | |
| Repacked | 6.50 | @ 7.50 |
| Miscellaneous | 6.50 | @ 7.00 |
| White, No. 2— | | |
| Repacked | 4.00 | @ 4.25 |
| Miscellaneous | 3.50 | @ 3.75 |
| St. Soiled, White | 2.90 | @ 3.00 |
| Thirds and Blues— | | |
| Repacked | 3.75 | @ 4.00 |
| Miscellaneous | 3.00 | @ 3.25 |
| Black Stockings | 3.75 | @ 4.25 |
| Roofing Rags— | | |
| Cloth Strippings | 2.35 | @ 2.45 |
| No. 1 | 2.35 | @ 2.45 |
| No. 2 | 2.40 | @ 2.50 |
| No. 3 | 2.10 | @ 2.20 |
| No. 4 | 2.00 | @ 2.10 |
| No. 5A | 1.50 | @ 1.75 |

## Foreign Rags

| | | |
|---|---|---|
| New Light Silesias | 10.50 | @11.25 |
| Light Flannelettes | 10.50 | @12.00 |
| Unbleached Cottons | 13.50 | @15.00 |
| New White Cuttings | 13.50 | @15.00 |
| New Light Oxfords | 10.50 | @11.50 |
| New Light Prints | 9.00 | @10.00 |
| New Mixed Cuttings | 4.25 | @ 4.50 |
| New Dark Cuttings | 4.00 | @ 4.50 |
| No. 1 White Linens | 10.00 | @11.00 |
| No. 2 White Linens | 7.25 | @ 8.25 |
| No. 3 White Linens | 6.25 | @ 6.75 |
| No. 4 White Linens | 4.50 | @ 5.50 |
| Old Extra Light Prints | 4.25 | @ 4.75 |
| Ord. Light Prints | 3.25 | @ 3.75 |
| Med. Light Prints | 2.50 | @ 3.00 |
| Dutch Blue Cottons | 3.50 | @ 4.00 |
| Ger. Blue Cottons | 3.00 | @ 3.25 |
| Ger. Blue Linens | 4.00 | @ 4.50 |
| Checks and Blues | 3.25 | @ 3.50 |
| Linsay Garments | 2.00 | @ 2.45 |
| Dark Cottons | 2.25 | @ 2.35 |
| Shoppery | 2.20 | @ 2.30 |
| French Blues | 3.75 | @ 4.25 |

## Bagging

Prices to Mill F. o. b. N. Y.

| | | |
|---|---|---|
| Gunny No. 1— | | |
| Foreign | 3.60 | @ 4.00 |
| Domestic | 3.75 | @ 4.00 |
| Wool Tares, light | 2.85 | @ 3.00 |
| Wool, Tares, heavy | 2.90 | @ 3.10 |
| Bright, Bagging | 2.75 | @ 2.90 |
| Mixed Bagging | 2.30 | @ 2.40 |
| Sound Bagging | 2.10 | @ 2.20 |
| Roofing Bagging | 1.75 | @ 1.85 |
| Small Mixed Rope | 2.00 | @ 2.25 |
| Manila Rope— | | |
| Foreign | 5.50 | @ 6.00 |
| Domestic | 6.50 | @ 7.00 |
| New Bu. Cut | 3.75 | @ 4.00 |
| Hessian Jute Threads— | | |
| Foreign | 4.50 | @ 5.00 |
| Domestic | 4.00 | @ 4.50 |

## Old Waste Papers

(F. o. b. New York)

| | | |
|---|---|---|
| Shavings— | | |
| Hard, White, No. 1 | 3.60 | @ 3.80 |
| Hard, White, No. 2 | 3.25 | @ 3.50 |
| Soft, White, No. 1 | 3.25 | @ 3.50 |
| Flat Stock— | | |
| Stitchless | 1.30 | @ 1.40 |
| Overissue Mag | 1.30 | @ 1.40 |
| Solid Flat Book | 1.20 | @ 1.30 |
| Crumpled No. 1 | .85 | @ .95 |
| Solid Book Ledger | 1.90 | @ 2.00 |
| Ledger Stock | 1.50 | @ 1.60 |
| New B. B. Chips | .85 | @ .95 |
| Manilas— | | |
| New Env. Cut | 2.25 | @ 2.40 |
| New Cut No. 1 | 1.75 | @ 2.00 |
| Extra No. 1 old | 1.20 | @ 1.30 |
| Print | .80 | @ .90 |
| Container Board | .70 | @ .80 |
| Bogus Wrapper | .80 | @ .90 |
| Old Krafts Machine compressed bales | 2.25 | @ 2.35 |
| News— | | |
| No. 1 White News | 1.95 | @ 2.05 |
| Strictly Overissue | .80 | @ .90 |
| Strictly Folded | .70 | @ .80 |
| No. 1 Mixed Paper | .55 | @ .60 |
| Common Paper | .35 | @ .45 |

## Twines

| | | |
|---|---|---|
| Cotton—(F. o. b. Mill)— | | |
| No. 1 | .42 | @ .43 |
| No. 2 | .41 | @ .42 |
| No. 3 | .40 | @ .42 |
| India, No. 6 basis— | | |
| Light | .19 | @ .20 |
| Dark | .17 | @ .19 |
| B. C., 18 basis | .39 | @ .41 |
| A. B. Italian, 18 Basis | .36 | @ .61 |

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STANDARD and MULTIPLE PLY

ENGLISH WEAVE

*In Two, Three, Four, Five and Six Ply, 60 inches to 176 inches in width.*

*BY ACTUAL TEST this felt will dry 33 per cent more paper, with ABSOLUTELY NO FELT MARKS IN THE PAPER.*

*TRIUNE*

*THREE PLY FELT for other paper*

FITCHBURG DUCK MILLS

FITCHBURG · MASSACHUSETTS

# Clay

300 tons daily

AMERICAN MADE FOR AMERICAN TRADE

Some portion of our clay production is *pulverized.* That part of it which is *pulverized* is, as far as we know, the only *pulverized clay* which is washed and refined before being pulverized. This insures greater freedom from impurities and an exceedingly uniform product.

Prices on M-E pulverized clay may surprise you even considering this additional treatment.

*Let us submit samples and quote you*

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# BLUE RIDGE FIBER

Bleached Soda Pulp

Manufactured and sold by

COLUMBIAN PAPER COMPANY

BUENA VISTA VIRGINIA

*Samples and Prices upon application*

Your Card in This Space
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*Rates on application*

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1864 1925

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**Seamless felts for fast running.**
**Satin Style felts for finish.**
**Special felts to meet every condition.**
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| | | | |
|---|---|---|---|
| **Finished Jute—** | | | |
| Dark, 18 basis... | .30 | @ | .31 |
| Light, 18 basis.. | .28 | @ | .30 |
| Jute Wrapping, 3-6 Ply— | | | |
| No. 1 ..... | .21 | @ | .23 |
| No. 2 ..... | .21 | @ | .23 |
| Tube Rope— | | | |
| 4-ply and larger.. | .15½ | @ | .17½ |
| [illegible] | | | |
| 4-ply and larger.. | .20 | @ | .28 |
| 4-ply ..... | .21 | @ | .24 |
| [illegible] | .22 | @ | .25 |

| | | | |
|---|---|---|---|
| **Unfinished India—** | | | |
| Basis ..... | .14½ | @ | .15½ |
| **Paper Makers' Twine** | | | |
| Balls ..... | .12 | @ | .13 |
| **Box Twine, 2-3 ply** | .14 | @ | .15 |
| **Jute Rope** ..... | .20 | @ | .40 |
| **Ameri. Hemp, 6...** | .30 | @ | .32 |
| **Sisal Hay Rope—** | | | |
| No. 1 Basis .... | .14 | @ | .16 |
| No. 2 Basis..... | .10 | @ | .12 |
| **Sisal Lath Yarn—** | | | |
| No. 1 ..... | .14 | @ | .15 |
| No. 2 ..... | .11 | @ | .13 |
| **Manila Rope** ..... | .18 | @ | .19 |

## CHICAGO

### Paper

F. o. b. Mill

| | | | |
|---|---|---|---|
| **All Rag Bond**..... | 35 | @ | 40 |
| **No. 1 Rag Bond**... | 25 | @ | 35 |
| **No. 2 Rag Bond**... | 14 | @ | 25 |
| **Water Marked Sulphite** ..... | 9 | @ | 12 |
| **Sulphite Bond**..... | 7 | @ | 10¾ |
| **Sulphite Ledger**.... | 9 | @ | 12 |
| **Superfine Writing**.. | 18 | @ | 24 |
| **No. 1 Fine Writing** | 14 | @ | 18 |
| **No. 2 Fine Writing** | 12 | @ | 14 |
| **No. 3 Fine Writing** | 9 | @ | 12 |
| **No. 1 M. F. Book.** | 5½ | @ | 7½ |
| **No. 1 S. & S. C. Book** ..... | 6 | @ | 7¾ |
| **Coated Book**..... | 7½ | @ | 10 |
| **Coated Label**..... | 7½ | @ | 10 |
| **News—Roll, mill**... | 3½ | @ | 4¼ |
| **News—Sheets, mill** | 3¾ | @ | 4¾ |
| **No. 1 Manila**..... | 4½ | @ | 5½ |
| **No. 1 Fibre**..... | 4½ | @ | 5 |
| **No. 2 Manila**..... | 4 | @ | 4½ |
| **Butchers' Manila**.. | 3¾ | @ | 4¼ |
| **No. 1 Kraft**..... | 6 | @ | 6½ |
| **No. 2 Kraft (Southern Grade)**..... | 4¾ | @ | 5 |
| **No. 2 Kraft (Northern Grade)**..... | 5 | @ | 5¼ |
| **Wood Tag Boards.** | 4¾ | @ | 6¾ |
| **Sulphite Screenings** | 3 | @ | 3¾ |
| **Manila Tissue, 24x36 sheet** ..... | 7¼ | @ | 7¾ |
| **White Tissue, 20x30 sheet** ..... | 7¼ | @ | 7½ |

**Boards, per ton—**
(Delivered Central Territory)

| | | |
|---|---|---|
| Plain Chip .....45.00 | @ | 47.50 |
| Solid News.....47.50 | @ | 50.00 |
| Manila Line Chip.57.50 | @ | 60.00 |

| | | | |
|---|---|---|---|
| **Container Lined—** | | | |
| **(Delivered Central Territory)** | | | |
| 85 Test ..... | — | @ | 75.00 |
| 100 Test ..... | — | @ | 80.00 |

### Old Papers

F. o. b. Chicago

| | | | |
|---|---|---|---|
| **Shavings—** | | | |
| No. 1 Hard White | 3.25 | @ | 3.50 |
| **White Envel. Cuttings** ..... | 3.15 | @ | 3.25 |
| No. 1 Soft Shav. | 2.90 | @ | 3.10 |
| **No. 1 Mixed**.... | 1.45 | @ | 1.50 |
| **No. 2 Mixed**.... | 1.15 | @ | 1.20 |
| Ledger and Writings | 1.55 | @ | 1.60 |
| Solid Books ..... | 1.45 | @ | 1.50 |
| **No. 1 Light Books** | 1.00 | @ | 1.05 |
| Blanks ..... | 2.00 | @ | 2.10 |
| Kraft ..... | 2.45 | @ | 2.50 |
| New Kraft Cuts. | 2.70 | @ | 2.80 |
| **Manila Envelope Cuttings** ..... | 2.50 | @ | 2.60 |
| Ex. No. 1 Manila.. | 2.25 | @ | 2.35 |
| Print Manila ..... | 1.05 | @ | 1.10 |
| **Folded News (oversize)** ..... | .90 | @ | .95 |
| **Old Newspapers—** | | | |
| No. 1 ..... | .80 | @ | .85 |
| No. 2 ..... | .65 | @ | .70 |
| **Mixed Papers—** | | | |
| No. 1 ..... | .75 | @ | .80 |
| No. 2 ..... | .55 | @ | .60 |
| **Straw Clippings**.... | .75 | @ | .80 |
| Binders' Clippings.. | .75 | @ | .80 |
| **Roofing Stocks, f. o. b. Chicago, Net Cash—** | | | |
| No. 1.....47.00 | @ | 52.00 | |
| No. 2.....45.00 | @ | 50.00 | |
| No. 3 .....43.00 | @ | 48.00 | |
| No. 4.....41.00 | @ | 46.00 | |

## BOSTON

### Paper

| | | | |
|---|---|---|---|
| **Ledgers—** | | | |
| Sulphite ..... | .08½ | @ | .18 |
| Rag content ..... | .18 | @ | .36½ |
| All Rag ..... | .38 | @ | .50 |
| **Bonds—** | | | |
| Sulphite ..... | .07½ | @ | .10½ |
| Rag Content..... | .17 | @ | .45 |
| All Rag ..... | .36½ | @ | .51 |
| **Writings** ..... | .08 | @ | .20 |
| Superfines ..... | .22 | @ | .50 |
| **News** ..... | .04 | @ | .04½ |
| **Book, Super** ..... | .08 | @ | .10 |
| **Book, Coated** ..... | .09 | @ | .14 |
| **Coated Litho**..... | .09½ | @ | .15 |
| **Label** ..... | .09½ | @ | .15 |
| **Jute Manila No. 1.** | .11 | @ | .12 |
| **Manila, Sul. No. 1.** | .05 | @ | .05 |
| **Manila, Sul. No. 2.** | .03¾ | @ | .04¼ |
| **No. 1 Kraft**..... | .05¾ | @ | .06½ |
| **No. 2 Kraft**..... | .05¼ | @ | .05¾ |
| **Common Bogus**.... | .02½ | @ | .02¾ |
| **Straw Board** ..... | — | @ | 50.00 |
| **News Board** ..... | — | @ | 50.00 |
| **Chip Board** ..... | — | @ | 47.50 |
| **Single Manila Pulp lined board** .....57.50 | @ | 60.00 | |
| **Single White, patent coated board** ....75.00 | @ | 82.50 | |
| **Wood Pulp Board**..80.00 | @ | 85.00 | |
| **Binder Boards**.....75.00 | @ | 85.00 | |
| **Tarred Felts—** | | | |
| Regular .....61.00 | @ | 63.00 | |
| Slaters .....66.00 | @ | 68.00 | |
| **Best Tarred, 1 Ply, roll** ..... 1.50 | @ | 1.60 | |
| **Best Tarred, 2 Ply, roll** ..... 1.70 | @ | 1.80 | |
| **Best Tarred, 3 Ply, roll** ..... 2.00 | @ | 2.10 | |

### Old Papers

| | | | |
|---|---|---|---|
| **Shavings—** | | | |
| No. 1 Hard White | 3.75 | @ | 4.00 |
| **White Black News** | 1.75 | @ | 2.00 |
| **Manila Env. Cuttings** ..... | 2.80 | @ | 3.00 |
| **No. 2 Hard White** | 3.25 | @ | 3.50 |
| **No. 1 Soft White**.. | .02¾ | @ | .03 |
| **No. 2 Soft White**.. | .02½ | @ | .03 |
| **No. 1 Mixed**..... | 1.60 | @ | 1.75 |
| **No. 2 Mixed**..... | 1.25 | @ | 1.50 |
| **Solid Ledger Stock** | 2.00 | @ | 1.75 |
| No. 1 Books, Heavy | 1.25 | @ | — |
| **No. 1 Books, Light** | — | @ | 1.25 |
| **No. 1 New Manila.** | 2.50 | @ | 2.60 |
| **No. 1 Old Manila.** | 1.75 | @ | 2.00 |
| **Print Manila** ..... | 1.05 | @ | 1.20 |
| [illegible] | 2.25 | @ | 2.35 |
| Overissue News ... | 1.00 | @ | 1.10 |
| Old Newspapers ... | .70 | @ | .85 |
| **No. 1 Mixed Paper** | .60 | @ | .47½ |
| **Box Board, Chip..** | .60 | @ | .50 |

### Bagging

Price f. o. b. Boston

| | | | |
|---|---|---|---|
| **Gunny No. 1—** | | | |
| Foreign ..... | — | @ | 3.37½ |
| Domestic ..... | — | @ | 3.50 |
| Mixed Rope ..... | — | @ | 5.50 |
| Mixed Rope ..... | 2.00 | @ | — |
| Scrap burlaps ... | — | @ | 2.37½ |
| Wool Tares, heavy. | 2.50 | @ | 2.75 |
| Mixed Strings... | — | @ | 1.90 |
| New Burlap Cutting | — | @ | 3.25 |

### Domestic Rags (New)

Price f. o. b. Boston

| | | | |
|---|---|---|---|
| Shirt Cutungs— | | | |
| New White No. 1 | .15½ | @ | .15 |
| **Silesias, No. 1...** | .11 | @ | — |
| New Unbleached. | .14¼ | @ | .15 |
| Washable ..... | .07½ | @ | .08 |
| **Fancy** ..... | .10½ | @ | — |
| Cottons—According to Grades—Blue— | | | |
| Blue overalls..... | 12½ | @ | — |
| **New Black, soft...** | .07 | @ | — |
| Khaki Cuttings..... | .07 | @ | — |
| Corduroy ..... | .04 | @ | .05 |
| **New Canvas** ..... | .12 | @ | .12½ |

### Domestic Rags (Old)

Price f. o. b. Boston

| | | | |
|---|---|---|---|
| White No. 1 .....10.00 | @ | — | |
| Repacked ..... 9.50 | @ | — | |
| Miscellaneous ..... 8.50 | @ | — | |
| White No. 2— | | | |
| Repacked ..... 6.50 | @ | — | |
| Miscellaneous..... 5.25 | @ | — | |
| Thirds and Blues— | | | |
| Repacked ..... 5.00 | @ | — | |
| Miscellaneous ... 3.50 | @ | — | |
| Roofing Stock— | | | |
| No. 1 ..... 2.15 | @ | — | |
| No. 2 ..... 1.90 | @ | — | |
| No. 3 ..... 1.75 | @ | — | |
| No. 4 ..... 1.90 | @ | — | |

## PHILADELPHIA

### Paper

| | | | |
|---|---|---|---|
| **Bonds** ..... | .07 | @ | .40 |
| **Ledgers** ..... | .11 | @ | .40 |
| **Writings—** | | | |
| Superfine ..... | .13 | @ | .18 |
| Extra fine ..... | — | @ | .22 |
| Fine ..... | .20 | @ | .26½ |
| Fine, No. 2..... | .16 | @ | .25 |
| Fine, No. 3..... | .12 | @ | .20 |
| Book, M. F..... | .06¾ | @ | .07 |
| **Book, S. S. & C...** | .06 | @ | .07½ |
| **Book, Coated** ..... | .11 | @ | .16 |
| Coated Lithograph. | .09 | @ | .12 |
| **Label** ..... | .09 | @ | .12 |
| **News** ..... | .03¾ | @ | .04 |
| **No. 1 Jute Manila.** | .09½ | @ | — |
| **Manila Sul., No. 1** | .04¾ | @ | .06 |
| **Manila No. 2**..... | .04 | @ | .04½ |
| No. 2 Kraft..... | .05¼ | @ | .05¾ |
| No. 1 Kraft..... | .06¼ | @ | .06½ |
| Common Bogus .... | .02¾ | @ | — |
| **Straw Board** .....56.00 | @ | 55.00 | |
| News Board .....47.50 | | | |
| Chip Board .....50.00 | | | |
| **Wood Pulp Board.** 4.50 | @ | 5.00 | |

(Carload Lots)

| | | | |
|---|---|---|---|
| **Binder Boards—** | | | |
| Per ton .....75.00 | @ | 80.00 | |
| Carload lots ....65.00 | @ | 70.00 | |
| **Tarred Felts—** | | | |
| Regular .....66.00 | @ | 68.00 | |
| Slaters .....70.00 | @ | 72.00 | |
| **Best Tarred, 1-ply (per roll)** ..... 1.85 | @ | 1.95 | |
| **Best Tarred, 2-ply (per roll)** ..... 1.55 | @ | 1.70 | |
| Best Tarred, 3-ply. 2.10 | @ | 2.15 | |
| No. 1 Mixed Paper .65 | @ | .70 | |
| Common Paper.... .50 | @ | .60 | |
| **Straw Board, Chip.** .60 | @ | .65 | |
| **Binders Bd., Chip..** .60 | @ | .65 | |

### Domestic Rags—New

Price to Mill, f. o. b. Phila.

| | | | |
|---|---|---|---|
| **Shirt Cuttings—** | | | |
| New White, No. 1 | .13½ | @ | .14 |
| New White, No. 2 | .06 | @ | .08 |
| **Silesias, No. 1...** | .10½ | @ | .11 |
| **New Unbleached.** | .14 | @ | .14½ |
| Washable ..... | .07¼ | @ | .07¾ |
| **Fancy** ..... | .09½ | @ | .10 |
| **Cottons—according to grades—** | | | |
| Blue Overall .... | .11 | @ | .12 |
| **New Blue**..... | .04 | @ | .04¼ |
| **New Black Soft..** | .06 | @ | .06¾ |
| **New Light Seconds** | .03½ | @ | .03¾ |
| **Khaki Cuttings..** | .06½ | @ | .07 |
| **Corduroy** ..... | .04 | @ | .04½ |

### Bagging

F. o. b. Phila.

| | | | |
|---|---|---|---|
| **Gunny, No. 1—** | | | |
| Foreign ..... | 3.00 | @ | 3.25 |
| Domestic ..... | 3.00 | @ | 3.25 |
| Manila Rope .... | 4.75 | @ | 6.00 |
| Sisal Rope ..... | 2.50 | @ | — |
| Mixed Rope ..... | 1.00 | @ | 1.25 |
| Scrap Burlaps.... | 2.25 | @ | 2.50 |
| Wool Tares, heavy. | 2.00 | @ | 2.13 |
| Mixed Strings... | 1.25 | @ | — |
| **No. 1, New Lt. Burlap** ..... | 3.50 | @ | 3.75 |
| **New Burlap Cuttings** ..... | 3.25 | @ | 3.50 |

### Old Papers

F. o. b. Phila.

| | | | |
|---|---|---|---|
| **Shavings—** | | | |
| No. 1 Hard White ..... | 3.50 | @ | 3.60 |
| **No. 2 Hard White** | 3.00 | @ | 3.25 |
| No. 1 Soft White | 2.60 | @ | 2.70 |
| No. 2 Soft White | 2.00 | @ | 2.20 |
| No. 1 Mixed.... | 1.50 | @ | 1.60 |
| No. 2 Mixed.... | 1.00 | @ | 1.10 |
| **Solid Ledger Stock.** | 1.75 | @ | 1.90 |
| **Writing Paper** .... | 1.60 | @ | 1.00 |
| No. 1 Books, heavy | 1.30 | @ | 1.40 |
| No. 2 Books, light. | 1.20 | @ | 1.25 |
| No. 1 New Manila. | 1.80 | @ | 2.00 |
| No. 1 Old Manila.. | 1.60 | @ | 1.75 |
| **Print Manila**..... | 1.25 | @ | 1.35 |
| Container Manila.. | 1.00 | @ | 1.10 |
| **Old Kraft** ..... | 2.00 | @ | 2.10 |
| Over issue News... | .85 | @ | 1.00 |
| Old Newspaper.... | .70 | @ | .75 |
| **New Canvas** .... | .08¼ | @ | .09 |
| **New Black Mixed** | .05 | @ | .05½ |

### Old

| | | | |
|---|---|---|---|
| **White, No. 1—** | | | |
| Repacked ..... | 6.75 | @ | 7.00 |
| Miscellaneous ... | 6.25 | @ | 6.50 |
| **White, No. 2—** | | | |
| Repacked ..... | .05 | @ | .05¼ |
| Miscellaneous ... | .04¾ | @ | .05 |
| **Thirds and Blues—** | | | |
| Repacked ..... | 3.75 | @ | 4.00 |
| Miscellaneous ... | 3.15 | @ | 3.25 |
| Black Stockings. | 4.25 | @ | 4.50 |
| **Roofing Stock—** | | | |
| No. 1 ..... | 2.00 | @ | 2.15 |
| **No. 2** ..... | 1.90 | @ | 2.00 |
| **No. 3** ..... | 1.25 | @ | 1.35 |
| **No. 4** ..... | 1.10 | @ | 1.20 |
| **No. 5A** ..... | 1.10 | @ | 1.15 |
| **B** ..... | 1.05 | @ | 1.10 |
| **C** ..... | 1.00 | @ | 1.05 |

## TORONTO

### Paper

(Mill Prices to Jobbers f. o. b. Mill)

| | | | |
|---|---|---|---|
| **Bond—** | | | |
| Sulphite ..... | .10½ | @ | .12½ |
| Light tinted ..... | .11 | @ | .13½ |
| Dark tinted ..... | .12½ | @ | .15 |
| **Ledgers (sulphite).** | — | @ | .13 |
| **Ledgers No. 1**..... | .36 | @ | — |
| **Ledgers No. 2**..... | .27 | @ | — |
| **Writing** ..... | .09½ | @ | |
| **Writing S. C.** ..... | .10 | @ | |
| **News f. o. b. Mills—** | | | |
| Rolls (carloads).. 3.50 | @ | — | |
| Sheets (carloads). | — | @ | 4.25 |
| Sheets (2 tons or over) ..... | — | @ | 4.60 |
| **Book—** | | | |
| No. 1 M. F. (carloads) ..... 8.00 | @ | — | |
| No. 2 M. F. (carloads) ..... 7.50 | @ | — | |
| No. 3 M. F. (carloads) ..... 7.00 | @ | — | |
| No. 1 S. C. (carloads) ..... 8.50 | @ | — | |
| No. 2 S. C. (carloads) ..... 8.00 | @ | — | |
| No. 3 S. C. (carloads) ..... 7.50 | @ | — | |
| No. 1 Coated and litho .....14.50 | @ | — | |
| No. 2 Coated and litho .....13.50 | @ | — | |
| No. 3 Coated and litho .....12.75 | @ | — | |
| **Coated tinted** ..... | .15 | @ | — |
| **Wrapping—** | | | |
| Rag Brown ..... | 4.75 | @ | — |
| White Rap ..... | 5.25 | @ | — |
| **"B" Manila** ..... | 5.50 | @ | — |
| **No. 1 Manila** .... | 6.50 | @ | — |
| **Fiber** ..... | 6.50 | @ | — |
| **Kraft, M. F.**..... | 7.00 | @ | — |
| **M. G.** ..... | 7.15 | @ | — |

### Pulp

(F. o. b. Mill)

| | | | |
|---|---|---|---|
| Ground wood ....30.00 | @ | 32.50 | |
| Sulphite easy bleaching ..... 60.00 | @ | 65.00 | |
| Sulphite news grade 55.00 | @ | 58.00 | |
| Sulphite, bleached 75.00 | @ | 80.00 | |
| Sulphate ..... 62.50 | @ | 65.00 | |

### Old Waste Paper

(In carload lots, f. o. b. Toronto)

| | | | |
|---|---|---|---|
| **Shavings—** | | | |
| White Env. cut..3.65 | @ | — | |
| Soft White Book shavings ..... | — | @ | 3.15 |
| White Blk, News 1.70 | @ | — | |
| **Book and Ledger—** | | | |
| Flat Magazine and Book Stock (old) 1.25 | @ | — | |
| Light and Crumpled Book Stock 1.10 | @ | — | |
| Ledgers and Writings ..... 1.40 | @ | — | |
| Solid Ledgers ... 1.40 | @ | — | |
| **Manilas—** | | | |
| New Manila Cut. | — | @ | 1.60 |
| Printed Manilas.. 1.10 | @ | — | |
| Kraft ..... 2.25 | @ | — | |
| **News and Scrap—** | | | |
| Strictly Overissue .90 | @ | — | |
| Folded News ... .90 | @ | — | |
| **No. 1 Mixed Papers** ..... .70 | @ | — | |
| **Domestic Rags—** | | | |
| Price to mills, f. o. b. Toronto | | Per lb. | |
| **No. 1 White shirt cuttings** ..... | .14½ | @ | .14¾ |
| **No. 2 White shirt cuttings** ..... | .08 | @ | .08½ |
| **Fancy shirt cuttings** ..... | .09¼ | @ | .10 |
| **No. 1 Old Whites..** | — | @ | — |
| Third and blues... | — | @ | — |

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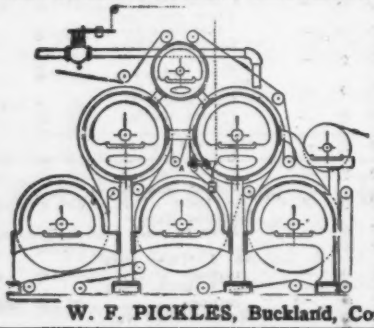

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